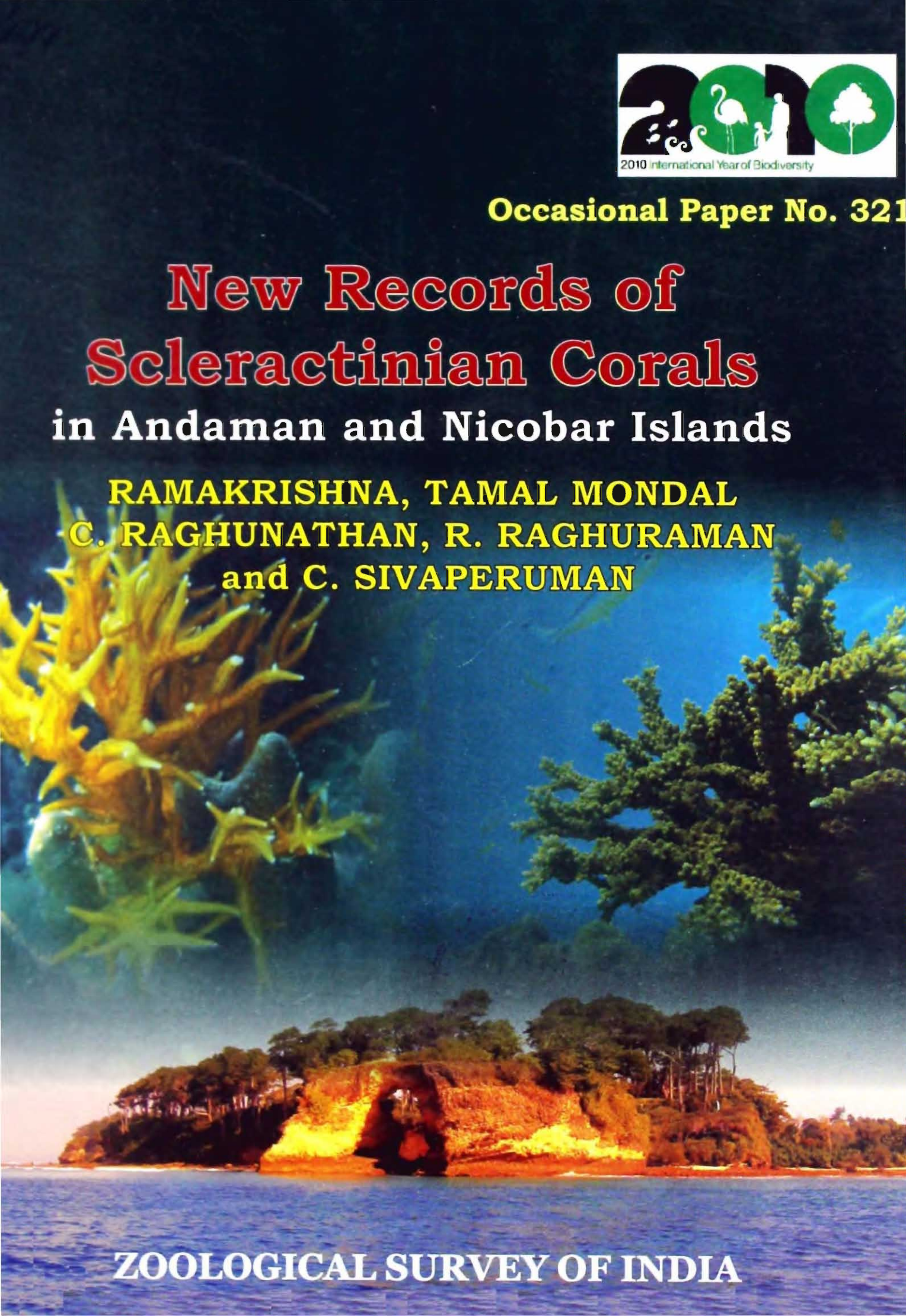
2010 International Year of Biodiversity

Occasional Paper No. 321

New Records of Scleractinian Corals in Andaman and Nicobar Islands

RAMAKRISHNA, TAMAL MONDAL
C. RAGHUNATHAN, R. RAGHURAMAN
and C. SIVAPERUMAN



ZOOLOGICAL SURVEY OF INDIA

OCCASIONAL PAPER NO. 321

RECORDS OF THE ZOOLOGICAL SURVEY OF INDIA

New Records of Scleractinian Corals in Andaman and Nicobar Islands

RAMAKRISHNA*, TAMAL MONDAL, RAGHUNATHAN, R. RAGHURAMAN AND C. SIVAPERUMAN

Zoological Survey of India, Andaman and Nicobar Regional Centre
Port Blair 744 102 (A & N Islands)

**Zoological Survey of India, M-Block, New Alipore, Kolkata 700 053*

Zoological Survey of India
Kolkata

CITATION
Ramakrishna, Tamal Mondal, Raghunathan, C., Raghuraman, R. and Sivaperuman, C. 2010. New Records of Scleractinian Corals in Andaman and Nicobar Islands. *Rec. zool. Surv. India, Occ. Paper No.*, **321** : 1-144. (Published by the Director, *Zool. Surv. India,* Kolkata)

Published : September, 2010

ISBN 978-81-8171-268-4

© *Govt. of India,* 2010

ALL RIGHTS RESERVED

- No part of this publication may be reproduced stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- This book is sold subject to the condition that it shall not, by way of trade, be lent, resold hired out or otherwise disposed of without the publisher's consent, in an form of binding or cover other than that in which, it is published.
- The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

PRICE
₹ 800.00
Foreign : $ 50; £ 40

Published at the Publication Division by the Director Zoological Survey of India, 234/4, AJC Bose Road, 2nd MSO Building, 13th floor, Nizam Palace, Kolkata - 700020 and printed at Power Printers, New Delhi - 110 002.

ACKNOWLEDGEMENT

Authors are grateful to the Ministry of Environment and Forests, Govt. of **India** for providing financial assistance to undertake the study through the **projects** of National Coral Reef Research Institute, Zoological Survey of India, **Port Blair**.

RECORDS OF THE ZOOLOGICAL SURVEY OF INDIA

OCCASIONAL PAPER

No. 321 **2010** **1-144**

CONTENTS

INTRODUCTION 1
LITERATURE REVIEW 2
STUDY AREAS 9
MATERIAL & METHODS 17
NEWLY RECODED SCLERACTINIAN CORALS 18
Family ACROPORIDAE Verrill, 1902 18
Genus ***Montipora*** de Blainville, 1830 18
1. *Montipora cebuensis* Nemenzo, 1976 18
2. *Montipora flabellata* Studer, 1901 19
3. *Montipora florida* Nemenzo, 1967 20
4. *Montipora verruculosus* Veron, 2000 21
5. *Montipora hemispherica* Veron, 2000 22
6. *Montipora grisea* Bernard, 1897 23
7 *Montipora delicatula* Veron, 2000 24
8. *Montipora porites* Veron, 2000 25
9. *Montipora taiwanensis* Veron, 2000 26
Genus ***Anacropora*** Ridley, 1884 27
10. *Anacropora reticulata* Veron and Wallace, 1984 27
Genus ***Acropora*** Oken, 1815 28
11. *Acropora copiosa* Nemenzo, 1967 29
12. *Acropora horrida* Dana, 1836 30
13. *Acropora mirabilis* Quelch, 1886 31
14. *Acropora plantaginea* Lamarck, 1816 32
15. *Acropora roseni* Wallace, 1999 33
16. *Acropora torresiana* Veron, 2000 34
17 *Acropora variolosa* Klunzinger, 1879 35
18. *Acropora verweyi* Veron and Wallace, 1984 36
19. *Acropora inermis* (Brook, 1891) 37

20. *Acropora sekiseiensis* (Veron, 1990) 38
21. *Acropora gomezi* Veron, 2000 39
22. *Acropora kimbeensis* Wallace, 1999 40
23. *Acropora haimei* (Milne Edwards & Haime, 1860) 41
24. *Acropora tanegashimensis* Veron, 2000 42
25. *Acropora desalwii* (Wallace, 1994) 43
26. *Acropora massawensis* Marenzeller, 1906 44
27 *Acropora tutuilensis* Hoffmeister, 1925 45
28. *Acropora anthocercis* (Brook, 1893) 46
29. *Acropora plana* Nemenzo, 1967 48
30. *Acropora insignis* Nemenzo, 1967 49

Genus ***Astreopora*** de Blainville, 1830 49
31. *Astreopora incrustans* Bernard, 1896 50
32. *Astreopora ocellata* Bernard, 1896 50

Family POCILLOPORIDAE Gray, 1842 51
Genus ***Pocillopora*** Lamarck, 1816 52
33. *Pocillopora danae* Verrill, 1864 52
34. *Pocillopora kelleheri* Veron, 2000 53
35. *Pocillopora ligulata* Dana, 1846 54

Genus ***Seriatopora*** Lamarck, 1816 55
36. *Seriatopora aculeata* Quelch, 1886 56

Family AGARICIIDAE Grey, 1847 56
Genus ***Agaricia*** Lamarck, 1801 57
37 *Agaricia fragilis* Dana, 1846 57

Genus ***Pavona*** Lamarck, 1801 58
38. *Pavona danai* Milne Edwards & Haime, 1860 59

Genus ***Leptoseris*** Milne Edwards and Haime, 1849 59
39. *Leptoseris cucullata* (Ellis & Solander, 1786) 61
40. *Leptoseris solida* (Quelch, 1886) 61

Genus ***Pachyseris*** Milne Edwards and Haime, 1849 63
41. *Pachyseris foliosa* Veron, 1990 64

Family FUNGIIDAE Dana, 1846 64
Genus **Cantharellus** Höksema and Best, 1984 66
42. *Cantharellus noumeae* Höksema and Best, 1984 66

Genus ***Fungia*** Lamarck, 1801 67
43. *Fungia fralinae* Nemenzo, 1955 68

44. *Fungia scabra* (Doderlein, 1901) 69
45. *Fungia spinifer* (Claereboudt and Hoeksema, 1987) 70
46. *Fungia taiwanensis* (Hoeksema & Dai, 1991) 71
Genus ***Lithophyllon*** Rehberg, 1892 72
47 *Lithophyllon lobata* (Horst, 1921) 72
Family PECTINIIDAE Vaughan and Wells, 1943 73
Genus ***Mycedium*** Oken, 1815 74
48. *Mycedium robokaki* Moll and Borel-Best, 1984 74
Genus ***Pectinia*** Oken, 1815 75
49. *Pectinia teres* Nemenzo, 1981 75
Family DENDROPHYLLIDAE Grey, 1847 77
Genus ***Dendrophyllia*** de Blainville, 1830 77
50. *Dendrophyllia robusta* (Bourne, 1905) 77
Genus ***Tubastraea*** Lesson, 1829 78
51. *Tubastrea diaphana* Dana, 1846 78
52. *Tubaastrea fulkneri* (Wells, 1982) 79
Family MUSSIDAE Ortmann, 1890 80
Genus ***Lobophyllia*** de Blainville, 1830 81
53. *Lobophyllia robusta* Yabe and Sugiyama, 1936 81
Genus ***Symphyllia*** Milne Edwards and Haime, 1848 82
54. *Symphyllia valenciennesii* Milne Edwards & Haime, 1849 82
55. *Symphyllia erythraea* (Klunzinger, 1879) 83
Genus ***Scolymia*** Haime, 1852 85
56. *Scolymia vitiensis* Bruggemann, 1877 85
Genus ***Mycetophyllia*** Milne Edwards and Haime, 1848 87
57 *Mycetophyllia danaana* Milne Edwards and Haime, 1849 87
Family FAVIIDAE Gregory, 1900 88
Genus ***Favia*** Oken, 1815 88
58. *Favia albidus* Veron 2000 89
59. *Favia lacuna* Veron, Turak and DeVantier, 2000 90
60. *Favia lizardensis* Veron & Pichon, 1977 91
61. *Favia maxima* Veron, Pichon, 1977 92
Genus ***Favites*** Link, 1807 94
62. *Favites micropentagona* Veron, 2000 94
63. *Favites paraflexuosa* Veron, 2000 95

64. *Favites spinosa* (Klunzinger, 1879) 96
65. *Favites vasta* (Klunzinger, 1879) 97
Genus ***Platygyra*** Ehrnberg, 1834 98
66. *Platygyra crosslandi* (Matthai, 1928) 99
67 *Platygyra ryukyuensis* Yabe & Sugiyama, 1936 100
Genus ***Solenastrea*** Milne Edwards and Haime, 1848 101
68. *Solenastrea bournoni* Milne Edwards and Haime, 1849 101
Genus ***Oulophyllia*** Milne Edwards and Haime, 1848 102
69. *Oulophyllia bennettae* (Veron and Pichon, 1099) 103
Genus ***Leptoria*** Milne Edwards and Haime, 1848 104
70. *Leptoria irregularis* Veron, 1990 104
Genus ***Diploria*** Milne Edwards and Haime, 1848 105
71. *Diploria strigosa* (Dana, 1848) 106
Genus ***Cyphastrea*** Milne Edwards and Haime, 1848 107
72. *Cyphastrea japonica* Yana and Sugiyama, 1932 108
73. *Cyphastrea ocellina* (Dana, 1864) 109
Genus ***Echinopora*** Lamarck, 1816 110
74. *Echinopora fruticulosa* (Ehrenberg, 1834) 111
Family PORITIDAE Grey, 1842 112
Genus ***Porites*** Link, 1807 112
75. *Porites arnaudi* Reyes-Bonilla & Carricart-Ganivet, 2000 112
76. *Porites harrisoni* Veron, 2000 114
77 *Porites myrmidonensis* Veron, 1985 115
78. *Porites porites* (Pallas, 1766) 116
Genus ***Goniopora*** de Blainville, 1830 117
79. *Goniopora norfolkensis* Veron and Pichon, 1982 117
80. *Goniopora pandoraenis* Veron and Pichon, 1982 119
Genus ***Alveopora*** de Blainville, 1830 120
81. *Alveopora catalai* Wells, 1968 120
Family OCULINIDAE Oken, 1815 121
Genus ***Galaxea*** Oken, 1815 122
82. *Galaxea cryptoramosa* Fenner and Veron, 2000 122
Checklist of Scleractinian Corals of Andaman & Nicobar Islands 124
REFERENCES 140

INTRODUCTION

Coral forms range from compact brain corals found in areas of high wave energy, through heavy branching and plate corals in deeper water, off the reef edge, to smaller finely branched corals found behind the reef crest and in the lagoon. Coral reefs are generally divided into four main types: atolls, barrier reefs, platform reefs, and fringing reefs. Atolls, where reefs form a ring around a lagoon, are mainly found in the Indian and Pacific Oceans. In the Pacific they are grouped into long island chains such as those of Micronesia and Central Polynesia. Barrier reefs are separated from the mainland by a deep channel or lagoon, in which are found platform reefs. Fringing reefs are directly attached to land or separated only by a shallow lagoon. On an individual reef, the total count of fish species and smaller marine organisms may exceed several thousand, but the number of individual coral species is much lower. The Indo-Pacific has some 700 reef-building coral species, many times more than the tropical Atlantic. In general, reefs in the Indo-Pacific differ from those of the Atlantic by having many more coral species, and by supporting much richer animal communities on their intertidal reef flats. Reefbuilding or hermatypic corals contain within their tissues symbiotic algae, so that the colony actually functions as a plant-animal combination. A coral reef is the physical structure created by the growth of the reef community. When a coral colony dies through storm damage, is broken by the action of living organisms, or is eaten by a parrotfish, the skeleton becomes the basic material forming the reef structure. Dead coral branches form the substrate on which new corals grow, while the fragments are cemented together by the action of coralline algae. The fragmented skeletons form the sand which contributes to reef growth by filling in the spaces between the larger fragments of dead coral skeletons. Continual deposition allows a reef to keep pace with rising sea-level by upward growth. Coral species, coral communities and the reef structure differ widely in the growth rates. Among the species, branching and staghorn corals can add more than 10cm a year to their branches. Massive corals grow at about a tenth of that rate, or roughly 10 mm a year. As for vertical reef growth, in Mauritius it reaches as much as 10 mm a year, but not more than a few millimetres forsome reefs in the Red Sea. Coral reefs depend very much on the prevailing environmental conditions. Some reefs did not survive the rapid sea-level changes experienced during the ice ages. We find many dead reefs drowned in earlier periods, or stranded above present sea-level. But under the right conditions coral colonies can survive for centuries. The coral reef is an entire living system, a structure built by colonies of tiny coral animals over

millions of years. Teaming with as much biodiversity as terrestrial rainforests, coral reefs, with their extraordinary beauty, bright palette of colors, and oddly patterned inhabitants, are one of Earth's most important ecosystems. The biodiversity of the reef system supports a vast interdependent food web, from microscopic plants and animals to humans. However, this life sustaining resource is now seriously threatened by human impact. The possible warming of our climate with associated warming of ocean temperatures, increased sedimentation from development along coastal areas, pollution, and unsustainable fishing methods are only some of the threats to reefs worldwide. As humen change the environment on the surface of the Earth, the conditions underneath the surface of our oceans change accordingly. From the microscopic plants that live within the tissues of the corals to the diversity of invertebrates and fishes that find food and shelter within the colourful caves and crevices, the reef system's millions of species also provide important food resources for sharks, sea turtles and dolphins. Millions of people throughout the world depend directly on the reefs for their livelihood. There are more species of organisms living on coral reefs than in any other environment in the ocean. In fact, despite covering less than 0.2 percent of the total area of oceans, coral reefs are noted for some of the highest levels of total productivity on Earth and house 25% of all marine creatures. Like a rainforest, coral reefs form a habitat where an astonishing array of life thrives. It has been estimated that between 1-9million species live on coral reefs. Reefs are home to thousands of species found nowhere else on Earth. For many it is a hunting ground, a safe place to hide, a place to breed, to raise young, and to grow old. There is a complex and delicate web of close relationships between the many organisms in the coral reef ecosystem. Coral reefs are dynamic systems, producing lime stones at the rate of 400-2000 tones per hectare per year. Coral reefs influence the chemical balance of world's oceans (Smith, 1978). Reef corals do best in shallow, warm, clear oceanic water. Therefore reefs are most abundant away from large land masses, which produce too much freshwater runoff and sediments. Coral reefs are found in warm sub-tropical or tropical oceans where the annual temperature range is 20-30°C.

LITERATURE REVIEW

The ancient phylum Cnidaria is best known for its contribution to geo-morphological features, forming thousands of square kilometers of coral reefs in warm tropical waters. Their fossil remains contribute to some limestone. Cnidarians are also significant components of the plankton, where large medusae – popularly called jellyfish – and colonial forms like Portuguese man-of-war and stringy siphonophores prey on other organisms including small fish. Worldwide, there are about 10,000 described species, with perhaps

half as many again undescribed. All cnidarians have nettle cells known as nematocysts (or cnidae – from the Greek, *knide*, a nettle), extraordinarily complex structures that are effectively invaginated coiled tubes within a cell. When triggered, the cnidae are explosively evaginated, their barbed tips penetrating cells of other organisms and discharging toxins. Thousands of these are found in the tentacles of anemones, medusae, and hydroids, which are all effectively carnivorous, whether they capture large prey or suspension-feed on small particles. Some cnidarians employ mucus feeding in conjunction with nematocysts. A distinctive feature of the phylum is the dimorphic body form into polyp and medusa, which probably accounts for the range of morphological and ecological diversification.

Cnidaria comprises two reciprocally monophyletic clades. The distinction between Anthozoa and Medusozoa is well-supported by anatomy and life history (Salvini-Plawen, 1978; Bridge *et al.*, 1995), genome structure (Bridge *et al.*, 1992; Brugler, 2004), and DNA sequences (e.g., Cavalier-Smith *et al.*, 1996; Odorico & Miller, 1997; Collins, 1998; Berntson *et al.*, 1999; Kim *et al.*, 1999; Medina *et al.*, 2001; Won *et al.*, 2001; Collins, 2002). The traditional taxonomic structure of Cnidaria mirrors its phylogenetic structure, although the ranks of many groups are incompatible with their hierarchical phylogenetic position. Cnidae, organelle-like capsules with eversible tubules (e.g., Weill, 1934; Watson 1988), are the diagnostic feature of the phylum. Of the three types of cnidae (nematocysts, ptychocysts, and spirocysts), only nematocysts are found across the clade.

The class Anthozoa comprises all members of the clade Anthozoa; its sister taxon, Medusozoa, comprises the remaining classes. Thus, class and other ranks have different phylogenetic implications across the phylum. Anthozoans comprise the largest group of Cnidaria, with about 6,000 living species worldwide. All are marine and there is no medusa phase. The mouth opens into a stomach cavity that is partitioned by mesenteries that expand the inner absorptive surface. There are two subclasses – the Octocorallia (Alcyonaria), which have eight mesenteries and tentacles, and the Hexacorallia (Zoantharia) with tentacles and mesenteries in multiples of six.

The class Anthozoa comprises two reciprocally monophyletic lineages, Octocorallia and Hexacorallia. All members of Anthozoa are exclusively polypoid, and may be colonial, clonal, or solitary, skeleton-less or with a mineralic and/or proteinaceous skeleton. Anthozoa currently contains approximately 7,500 extant species. The anthozoan subclass Hexacorallia comprises all scleractinian and black corals, tube anemones, and sea anemones in the broadest sense (i.e., orders Actiniaria, Antipatharia, Ceriantharia, Corallimorpharia, Scleractinia, and Zoanthidea). Hexacorallia

currently contains about 4,300 extant species (Doumenc & van Praët, 1987). As the name suggests, most hexacorallians have hexamerous symmetry, although eight- or ten-part symmetry are not uncommon. All members of Hexacorallia have spirocysts, a type of cnida with a single walled capsule and a tubule composed of tiny entangling sub-threads (Mariscal *et al.*, 1977). The Scleractinia Bourne, 1900 are polyp animals found exclusively in marine habitats. Its members are referred to as stony corals because all members of the order bear a solid calcareous skeleton that is external to the soft tissues, secreted by epidermal cells at the base of polyps to form cup-like calyces subdivided by septa and into which the polyp can retract for protection. Within the Anthozoa, such a skeleton is unique to the order The approximately 1,300 described extant species (Cairns, 1999) are divided ecologically into two main groups. One group, the reef builders, comprises 656 species. These are perhaps the best known scleractinian corals and are found mostly in the clear, shallow waters of the tropics. The second group, composed of 669 species, does not build reefs and is found in all regions of the oceans, including temperate and polar regions, and from relatively shallow waters to 6,000 m. The oldest scleractinian coral fossils are from the mid-Triassic (about 240 million years ago) and are similar to the scleractinians of today. Higher-order relationships between families and suborders of scleractinians are poorly understood. The first comprehensive studies of scleractinian relationships in the mid-19th century were based on skeletal characters of both fossil and extant taxa (Milne-Edwards & Haime, 1857; Ogilvie, 1897). Vaughan and Wells' (1943) more recent treatment of the order revised several families, and are reflected in the current taxonomic organization of the order. The most widely accepted scleractinian phylogeny is that of Wells (1956), whose work is based on co-occurrence of genera in the fossil record and morphological characters of both fossil and extant scleractinians, but this phylogeny is not the product of an explicit phylogenetic analysis. Scleractinian phylogeny has received renewed attention in recent years, primarily due to the availability of new techniques. Roniewicz and co-workers (Roniewicz & Morycowa, 1993; Stolarski & Roniewicz 2001) used refined microstructural observations of both fossil and extant taxa to reevaluate scleractinian relationships. Veron (2000) has provided the most recent treatment of the order based on *in situ* observations and traditional morphological characters of extant taxa. However, his descriptions of new species bearing photosymbiotic dinoflagellates (= zooxanthellae) and revisions of families have not followed the International Code of Zoological Nomenclature, calling into question the taxonomic validity of his revisions. Phylogenetic analyses of molecular data have been used to reevaluate the relationships of families and genera within Scleractinia (Chen *et al.*, 1995; Romano & Palumbi 1996; Veron *et al.*, 1996; Romano & Cairns, 2000; Cuif *et al.*, 2003; Fukami *et al.*, 2004; Le Goff-Vitry *et al.*, 2004). Wells (1956)

divided the order into five suborders (comprising all fossil and extant taxa) but hypothesized relationships among suborders as tentative, and made few hypotheses about relationships among families. Veron (1986, 1995, 2000) elevated some families to suborders, resulting in 24 extant families in seven suborders (with another six extinct suborders), but did not include any hypotheses for relationships among suborders due to poor understanding of skeletal homologies. Roniewicz and Morycowa's (1993) hypothesis for evolution within the Scleractinia is based primarily on fossil taxa with consideration of a small number of extant taxa. Phylogenetic analyses based on molecular data generally support traditional groupings of genera into families, but are not congruent with the limited hypotheses proposed for among family relationships. Molecular data suggests a split in the Scleractinia early in the evolutionary history of the group (Chen *et al.*, 1995; Romano, 1996; Veron *et al.*, 1996; Romano & Cairns, 2000; Chen *et al.*, 2002; Cuif *et al.*, 2003; Daly *et al.*, 2003; Fukami *et al.*, 2004; Le Goff-Vitry *et al.*, 2004; Medina *et al.*, 2006). The two clades supported by molecular data do not correspond to the two clades supported by microstructural morphological characters. The current state of taxonomy in the Scleractinia demonstrates the need for a comprehensive reevaluation of families and their relationships. The following list of families still follows the nomenclature set forth by Wells (1956) with a few exceptions noted. For traditional family designations that are not supported by recent molecular studies, a brief description of the evidence is provided.

Acroporidae Verrill, 1902 comprises four genera, all zooxanthellate, and approximately 200 nominal species. A phylogenetic analysis of the family was conducted as part of a monograph on the genus *Acropora* and found the family to be monophyletic (Wallace 1999). Subsequent analyses based on molecular data have found the family to be paraphyletic because the genus *Alveopora* (Poritidae) is found within the clade containing all of the acroporids (Fukami *et al.* 2000; Romano & Cairns 2000; Le Goff-Vitry *et al.*, 2004; Kerr 2005).

Agariciidae Gray, 1847 comprises six genera, all zooxanthellate, and approximately 45 nominal species. The family is considered to be monophyletic based on limited molecular data (Romano & Palumbi, 1996; Romano & Cairns, 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005). However, there has been no phylogenetic analysis of the entire family.

Anthemiphylliidae Vaughan, 1907 comprises a single genus with seven nominal species. All species are azooxanthellate. The family is considered monophyletic based on morphological and limited molecular data, although no phylogenetic analysis has been conducted on the family (Romano & Cairns, 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Astrocoeniidae Koby, 1890 currently comprises either two or four genera, depending upon the reference used (Wells, 1956; Veron, 2000). The family is polyphyletic, with one clade equal to *Madracis* sensu Veron, (2000). Molecular evidence does not support this move, and without *Madracis* the family is monophyletic according to limited molecular evidence (Romano & Cairns, 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Caryophylliidae Gray, 1846 comprises more than 50 genera and approximately 300 nominal species which are neither zooxanthellate or azooxanthellate. The subfamily Euphyllidae was elevated to family status by Veron (2000). Monophyly of the family is not supported by molecular phylogenetic analysis. The family is polyphyletic and molecular data suggests the family needs reevaluation (Romano & Cairns 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Dendrophylliidae Gray, 1847 comprises 20 genera and approximately 150 nominal species. The majority of genera are azooxanthellate. A phylogenetic analysis by Cairns (2001) showed that the family is monophyletic. Limited molecular evidence also supports this conclusion (Romano & Cairns, 2000; Cairns, 2001; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Euphyllidae Veron, 2000 comprises five zooxanthellate genera and 14 nominal species. Veron (2000) elevated this subfamily of Caryophylliidae to family status because he found the designation of subfamilies to be artificial. The family has not been subject to phylogenetic analysis. The potential monophyly of the family remains in question and needs further evaluation.

Faviidae Gregory, 1900 comprises 24 genera and over 100 nominal species that are all zooxanthellate. It is thought to be polyphyletic based on evidence in several molecular studies, although a complete phylogenetic analysis has not been conducted for the family (Romano & Cairns, 2000; Cuif *et al.*, 2003; Daly *et al.* 2003; Fukami *et al.*, 2004; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Flabellidae Bourne, 1905 comprises 10 genera with approximately 100 nominal species, all of which are azooxanthellate. It is currently monophyletic based on morphological and limited molecular evidence, although no phylogenetic analysis has been conducted for the family (Cairns, 1989; Romano & Cairns, 2000; Le Goff-Vitry *et al.* 2004; Kerr, 2005).

Fungiacyathidae Chevalier, 1987 comprises one genus with approximately 20 nominal species, all of which are azooxanthellate. It is monophyletic based on morphological and limited molecular data (Cairns 1989; Romano & Cairns 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Fungiidae Dana, 1846 comprises 15 genera with approximately 56 nominal species, all of which are zooxanthellate (Veron, 2000). It is

considered monophyletic based on phylogenetic analysis of morphological data and limited molecular data (Cairns, 1984; Hoeksema, 1989; Romano & Cairns, 2000; Kerr, 2005). Le Goff-Vitry *et al.* (2004) found weak support for paraphyly in the family with limited taxonomic sampling.

Gardineriidae Stolarski, 1996 comprises a single genus made up of five nominal species, all of which are azooxanthellate. It is monophyletic based on morphological data but has not been the subject of a phylogenetic analysis (Stolarski 1996).

Guyniidae Hickson, 1910 comprises seven genera with 10 nominal species. All genera are monospecific except *Guynia*. The family has been the subject of a phylogenetic analysis using morphological data (Stolarski, 2000), but may be polyphyletic based on limited molecular data (Cuif *et al.*, 2003; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Meandrinidae Gray, 1847 comprises seven genera after Veron (2000) placed three species from Caryophylliidae here. All of the genera are zooxanthellate. The genera within this family remain in question. There has not been a phylogenetic analysis conducted for the entire family. Fukami *et al.* (2004) found the family to be monophyletic with strong support; however, other molecular studies suggest the family is paraphyletic (Romano & Cairns, 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Merulinidae Verrill, 1866 comprises five genera with approximately 12 nominal species, all of which are zooxanthellate. The family is considered polyphyletic based on molecular evidence (Fukami *et al.*, 2004; Kerr, 2005); however, no complete phylogenetic analysis has been conducted for the family.

Micrabaciidae Vaughan, 1905 comprises four genera with 13 nominal species, all of which are azooxanthellate. The family is monophyletic based on morphological data (Cairns 1989).

Mussidae Ortmann, 1890 comprises 13 genera with almost 50 nominal species. All genera are zooxanthellate. The family is polyphyletic based on molecular data although the family has not been analyzed completely (Fukami *et al.*, 2004; Kerr, 2005).

Oculinidae Gray, 1847 comprises 11 genera with approximately 30 nominal species. The family is split almost evenly between azooxanthellate and zooxanthellate genera. It is polyphyletic based on molecular evidence although no complete treatment of the family has been conducted (Romano & Cairns, 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Pectiniidae Vaughan & Wells, 1943 comprises five genera with almost 20 nominal species, all of which are zooxanthellate. Although the entire family

has not been the subject of a phylogenetic analysis, it is considered polyphyletic based on limited molecular data (Fukami *et al.*, 2004; Kerr, 2005).

Pocilloporidae Gray, 1842 comprises five genera, of which one is azooxanthellate, with over 30 nominal species. It has not been the subject of a phylogenetic analysis. Based on limited inclusion of some genera in the family, it is paraphyletic if *Madracis* is included (see Astrocoeniidae). With limited sampling and without *Madracis* the family forms a monophyletic clade based on molecular data (Romano & Cairns, 2000; Cuif *et al.*, 2003; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Poritidae Gray, 1842 comprises five genera containing over 70 nominal species, all of which are zooxanthellate. Although it has not been the explicit focus of any phylogenetic analysis, Poritidae is considered polyphyletic based on molecular evidence. The genus *Alveopora* is consistently found with the acroporids (Romano & Cairns, 2000; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Rhizangiidae D'Orbigny, 1851 comprises five genera with more than 30 nominal species. All but one genus is azooxanthellate. The family is thought to be monophyletic, but there is little data available to confirm or refute this assertion (Kerr, 2005).

Siderastreidae Vaughan & Wells, 1943 comprises six genera with 27 nominal species, all of which are zooxanthellate. It has not been the subject of a phylogenetic analysis, but is considered polyphyletic based on molecular evidence from several representatives of the family used in larger analyses (Chen *et al.* 2000; Romano & Cairns 2000; Daly *et al.*, 2003; Le Goff-Vitry *et al.*, 2004; Kerr, 2005).

Trachyphylliidae Verrill, 1901 comprises a single zooxanthellate genus and a single species. The family is by definition monophyletic (Fukami *et al.*, 2004; Kerr, 2005).

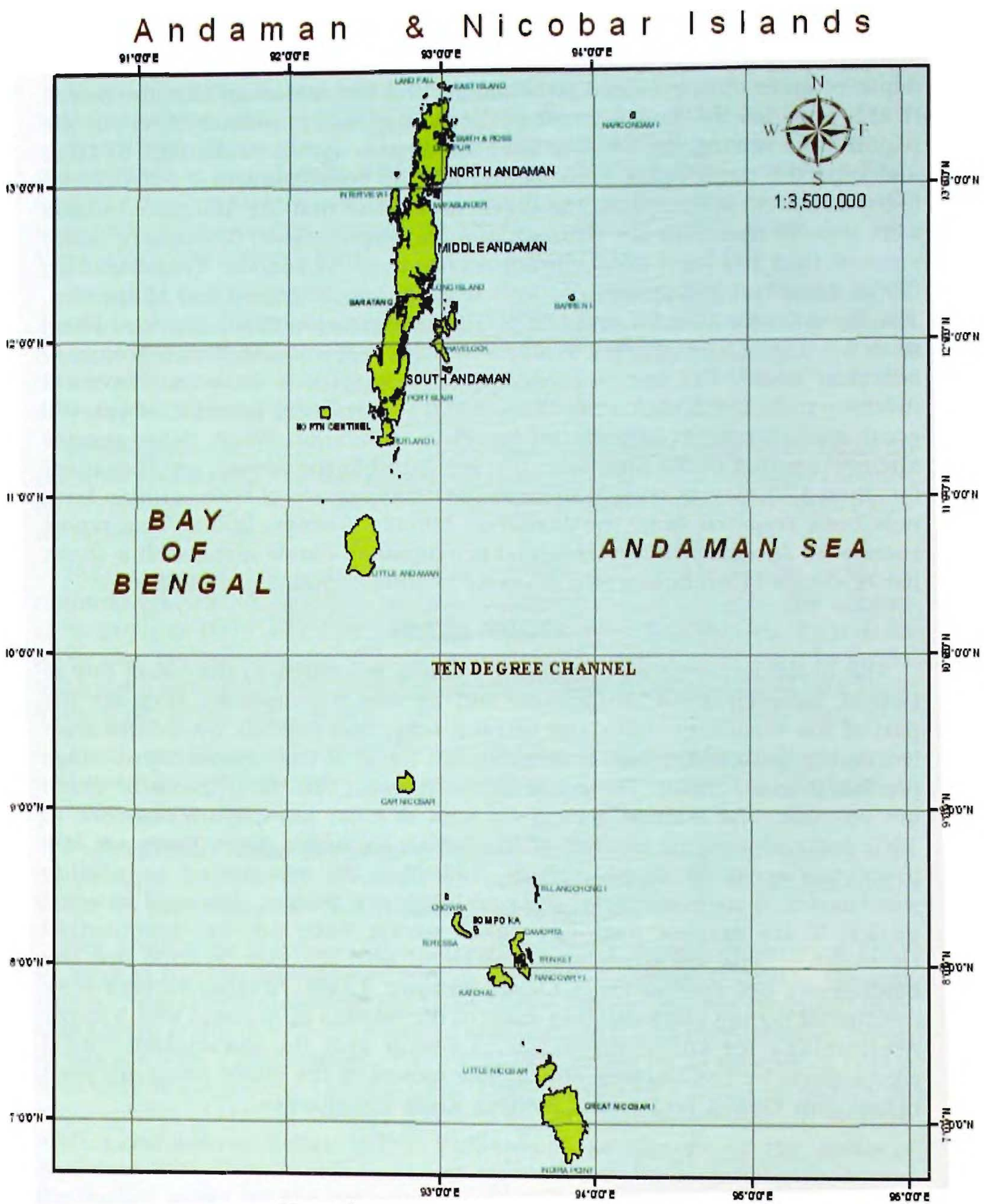
Turbinoliidae Milne-Edwards & Haime, 1848 comprises 22 genera and 51 nominal species, all of which are azooxanthellate. It is monophyletic based on morphological data (Cairns, 1997; Kerr, 2005).

The studies on taxonomy of coral reefs in India started as early as 1847 by Rink in Nicobar Islands and later in 1898 by Thurston at Gulf of Mannar region. Pillai (1967) submitted his Ph.D. thesis on the "Studies on Coral" from Mandapam group of islands of Gulf of Mannar and Chetlet and Minicoy group of islands from Lakshadweep. Pillai (1967) described 125 species of corals belonging to 34 genera. During 1969, Pillai published a series of papers on coral species of Gulf of Mannar followed by distribution of corals in Minicoy Atoll, Lakshadweep (Pillai, 1971). Followed by an account on the corals of Andaman & Nicobar Islands has been reported with the impetus gained from the earlier works on the collection of Andaman & Nicobar Islands (Scheer

and Pillai, 1974). Alcock (1902) described 25 species of deep sea Madreporaria dredged by Royal Indian Marine Survey Ship *Investigator* from depth of more than hundred fathoms, around the Andaman Islands. Sewell (1922) provided the first account of the ecology and formation of reef in the region after visiting the Nicobar Islands. He also visited Andamans in 1935 and reported the fringing reefs in and around coastline areas. Pillai (1983) listed 135 coral species from the region and found that the Andaman Islands were less diverse than the Nicobar Islands. Status report (Wilkinson, 2002) sources that 203 hard coral species occurs in these islands. Venkataraman (2003) described 228 species of coarls belonging to 58 genera and 18 families. The Government of India and UNDP GEF field mission (2001 diving studies) reported a total 198 species of scleractinian coral from Andaman groups of island of which 111 are supposed to be new records to India. The coral diversity of in the Andaman is 80% of that in the Coral Triangle, about 400 coral species may eventually be found in Andaman. When those species already reported in the literature, but not found in the survey, are accounted for, then 170 species remain to be found. 223 species of Scleractinian have now been reported from the Andaman Islands (Turner, 2009). This report reveals 85 speceis of newly recorded scleractinian corals along with a check list of corals of Andaman and Nicobar Islands containing 419 species.

STUDY AREAS

The Andaman & Nicobar group of Islands is located in the SE of Bay of Bengal, between 6°-14° N Latitude and 91°-94° E Longitude. They are the part of the mountain chain and lie on a ridge that extends southward from Irrawaddy delta of Burma, containing the trend of the Arakan Yoma range (Venkataraman, 2003). There are 572 islands in the chain, some of which are volcanic. The islands occupy an area of 8293 km^2 with a coastline of 1962 km and account for 30% of the Indian Exclusive Zone. There are 106 protected areas in these islands including 96 designated as wildlife sanctuaries, 9 national parks and one biosphere reserve. Among 9 national parks, 2 are marine national parks which have not yet inventoried thoroughly. The coral reefs of Andaman and Nicobar Islands are the biodiversity hot spot of India (Jeyabaskaran, 1999). Several surveys were conducted during 2008-2010 in most of the Islands of Andama and Nicobar Archipelago for the exploration of corals and its associated faunal components by the workers of ZSI. The names of the study areas are cited below with Global Positioning System (GPS) coordinates.



Map of Andaman and Nicobar Islands

Sl. No.	Area surveyed	GPS Coordinates
	South Andaman	
1.	Off Burmanella	Lat. 11° 33. 468'N Long. 92° 43.873'E
2.	Off Rangachang	Lat. 11° 34. 350'N Long. 92° 44.133'E
3.	Chidyatapu	Lat. 11° 29. 460'N Long. 92° 42.530'E
4.	Pongibalu	Lat. 11° 31. 030'N Long. 92° 39.159'E
	Rutland Island	
5.	Chain Nalah	Lat. 12° 08. 522'N Long. 93° 06.551'E
6.	Padauk Dikri	Lat. 12° 29. 288'N Long. 92° 40.141'E
7.	Surumai Dikri	Lat. 11° 25. 504'N Long. 92° 40.301'E
8.	Komeo	Lat. 11° 24. 314'N Long. 92° 39.780'E
9.	Mitta Nalah	Lat. 11° 28. 541'N Long. 92° 40.371'E
10.	Arom Point	Lat. 11° 30. 541'N Long. 92° 38.769'E
11.	Aam Dera	Lat. 11° 24. 664'N Long. 92° 37.456'E
12.	North Wandoor	Lat. 11° 37 270'N Long. 92° 37.035'E
13.	Grub Island	Lat. 11° 35. 391'N Long. 92° 35.637'E
14.	Jolly Buoy Island	Lat. 11° 30. 251'N Long. 92° 32.591'E
15.	Tarmugli Island	Lat. 11° 33. 261'N Long. 92° 36.809'E
16.	North Bay	Lat. 11° 42. 068'N Long. 92° 45.116'E
17	Off Collinpur	Lat. 11° 41. 598'N Long. 92° 37.035'E
18.	Off Kurmadera	Lat. 11° 39. 933'N Long. 92° 35.903'E
	Ritchie's Archipelago	
19.	Havelock Island	Lat. 12° 00. 005'N Long. 92° 56.808'E
20.	Inglis Island	Lat. 12° 08. 639'N Long. 93° 06.786'E
21.	Henry Lawrence Island	Lat. 12° 05. 000'N Long. 93° 06.312'E
22.	John Lawrence Island	Lat. 12° 04. 075'N Long. 93° 00.398'E
23.	Outram Island	Lat. 12° 00. 574'N Long. 92° 56.808'E
24.	Sir William Peel Island	Lat. 12° 03. 315'N Long. 92° 59.929'E
25.	Nicolson Island	Lat. 12 ° 06.739'N Long. 92 ° 57.235'E
26.	South Button Island	Lat. 12° 13. 467'N Long. 92° 01.334'E
27	North Button Island	Lat. 12° 18. 974'N Long. 92° 03.826'E

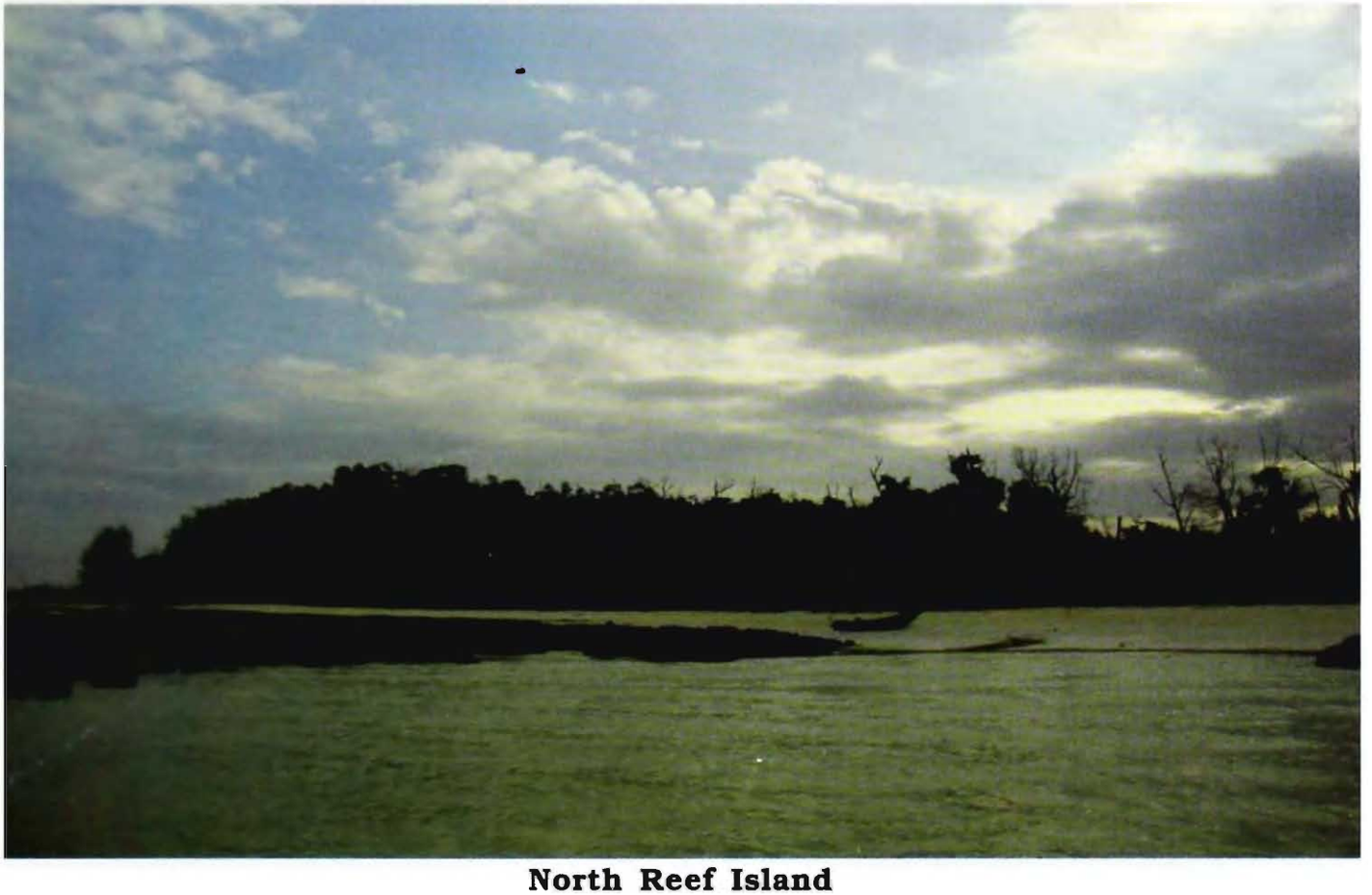
Sl. No.	Area surveyed	GPS Coordinates
28.	Middle Button Island	Lat. 12° 16. 473'N Long. 93° 01.334'E
29.	Wilson Island	Lat. 12° 13. 061'N Long. 93° 15.207'E
	Neil Island	
30.	Lakshmanpur	Lat. 11° 50. 826'N Long. 93° 00.554'E
31.	Hawrah Bridge	Lat. 11° 49. 727'N Long. 93° 00.818'E
32.	Middle Point	Lat. 11° 50. 857'N Long. 93° 00.554'E
33.	Ramangar	Lat. 11° 48. 400'N Long. 93° 01.440'E
34.	Sunset point	Lat. 11° 51. 941'N Long. 93° 00.667'E
35.	Little Neil Island	Lat. 11° 47. 063'N Long. 93° 04.616'E
36.	Pearl Park Beach	Lat. 11° 50. 766'N Long. 93° 00.795'E
	Little Andaman Island	
37.	Butler Bay	Lat. 10° 40. 232'N Long. 92° 56.808'E
38.	Kala Pathar	Lat. 10° 39. 558'N Long. 92° 34.109'E
39.	Haminder Bay	Lat. 10° 32. 975'N Long. 92° 32.651'E
40.	Off Ramkrishnapur	Lat. 10° 42. 630'N Long. 92° 33.066'E
41.	Sister Island	Lat. 10° 55. 830'N Long. 92° 07.023'E
42.	Hut Bay	Lat. 10° 35. 419'N Long. 92° 33.066'E
43.	Dugong Creek	Lat. 10° 48. 385'N Long. 92° 64.000'E
44.	Off Light House	Lat. 10° 30. 734'N Long. 92° 30.264'E
	Middle Andaman	
45.	North Reef Island	Lat. 12° 56. 084'N Long. 92° 57.345'E
46.	Interview Island	Lat. 12° 59. 125'N Long. 92° 42.981'E
47.	Avis Island	Lat. 12° 56. 210'N Long. 92° 33.066'E
48.	Sound Island	Lat. 12° 56. 084'N Long. 92° 57.345'E
49.	Rail Island	Lat. 12° 56. 860'N Long. 92° 54.620'E
50.	Karlo Island	Lat. 12° 56. 084'N Long. 92° 53.378'E
51.	Karmatang	Lat. 12° 51. 322'N Long. 92° 56.050'E
	North Andaman	
52.	Ross Island	Lat. 13° 18. 167'N Long. 93° 04.261'E
53.	Smith Island	Lat. 13° 18. 406'N Long. 93° 04.207'E

Sl. No.	Area surveyed	GPS Coordinates
54.	Ariel Bay	Lat. 13° 16. 093'N Long. 93° 02.433'E
55.	Lamia Bay	Lat. 13° 24. 879'N Long. 93° 05.516'E
	Nicobar IslandsCar Nicobar Island	
56.	Malacca	Lat. 09° 10. 490'N Long. 92° 49.714'E
57.	Kakaana	Lat. 09° 07. 750'N Long. 92° 48.678'E
58.	Tamoloo	Lat. 09° 11. 350'N Long. 92° 49.498'E
59.	Kimos	Lat. 09° 07. 587'N Long. 92° 46.316'E
60.	Perka	Lat. 09° 11. 203'N Long. 92° 49.877'E
61.	Lapati	Lat. 09° 13. 978'N Long. 92° 48.002'E
	Nancowry Islands	
62.	Kamorta Island Bada Enaka	Lat. 12° 51. 322'N Long. 92° 56.050'E
63.	Champin Island	Lat. 08° 01. 670'N Long. 93° 33.123'E
64.	Trinket Island	Lat. 08° 02. 806'N Long. 93° 34.556'E
65.	Kamorta Island – Kardip	Lat. 08° 02. 151'N Long. 93° 33.182'E
66.	Kamorta Island – Kakkana	Lat. 08° 07. 170'N Long. 93° 31.606'E
67.	Munak Island	Lat. 07° 59. 813'N Long. 93° 30.534'E
68.	Katchal Island	Lat. 07° 58.952'N Long. 93°24.351'E
69.	Teressa Island	Lat. 08° 13.686'N Long. 93°10.913'E
70.	Kundol Island	Lat. 07° 10. 023'N Long. 93° 42.949'E
	Great Nicobar Island	
71.	Campbell Bay	Lat. 06° 59. 749'N Long. 93° 56.718'E
72.	Off Laxman Beach	Lat. 07° 01. 482'N Long. 92° 37.456'E
73.	Off Gandhi Nagar	Lat. 06° 50. 496'N Long. 93° 53.680'E
74.	Joginder Nagar	Lat. 06° 57. 226'N Long. 93° 55.495'E
75.	Singam Basti	Lat. 06° 58. 307'N Long. 93° 55.748'E
76.	Navy Dera	Lat. 07° 07. 571'N Long. 93° 53.133'E
77.	Indira Point	Lat. 06° 45. 428'N Long. 93° 49.541'E
78.	Kopen Heat	Lat. 06° 50. 923'N Long. 93° 47.983'E

Havelock Island

Jolly Bouy Island

Neil Island



North Reef Island

Grub Island

Avis Island

MATERIAL AND METHODS

Several methods were undertaken to carry out the surveys by employing Self -Contained Underwater Breathing Apparatus (SCUBA) diving and snorkeling. Line intercept transect (Bradbury and Reichelt *et.al.*, 1986), Quadrate methods (Endean and Stablum, 1973), Photoquadrate and underwater video transect method were applied to investigate the diversity and distribution of the corals. The Line Intercept Transect is one method used to assess the sessile benthic community of coral reefs. The community is characterized using life form categories, which provide a morphological description of reef community. These categories are recorded on data sheet by divers who swim along lines, which are placed roughly parallel to the reef crest (if present) at varable depth at each site, dependent on the extent of reefal development. It is a reliable and efficient sampling method for obtaining quantitative percentage cover data. Quantitative assessment of coral cover can be carried out with the use of frame quadrats laid along transects. Survey work can be carried out *in situ* with the surveyor recording percentage cover of coral species within each quadrat or photographs of each quadrat can be taken and analyzed at a later time. These methods are commonly conducted along permanently marked transects and most useful for assessing demographic questions relating to population dynamics (e.g. growth, mortality) and temporal change. When carrying out photo-quadrat surveys a special quadrat frame with an underwater camera attached at a fixed height is used to take photographs of contiguous quadrats along transect lines. The photographic images provide a permanent record of change in coral cover of the surveyed sites. Underwater video sampling provides highly precise quantitative estimate of coral cover and abundance of common benthic taxa. The video technique in combination with independent sampling, i.e., no need to establish permanent transects, has proven to be a statistically powerful methodology for comparison of univariate and multivariate parameters in repeat surveys of identified sites of moderate – high coral cover (normally >20 %). This method involves the recording of standardized belt transects using a number of replicate transects of pre-determined length and filmed from a standardized height (approx. 40 cm). Video footage is subsequently analyzed to extract quantitative coral data using a point sampling method.During SCUBA diving, species recording was made by underwater digital photography (Sony -Cyber shot, Model-T900, marine pack, 12 megapixels) for detailed identification. Identification was done depending on the photographs in conjunction with Veron (2000), Wallace (1999) and (Sheppard, 1987).

NEWLY RECODED SCLERACTINIAN CORALS

Family ACROPORIDAE Verrill, 1902

Taxonomic references

Wells, J.W. 1954. Recent corals of the Marshall Islands. *US Geol. Survey Professional Papers*, **260** : 384-486.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Ins. Mar. Sci. Monogr Ser.*, **VI** : 485 pp.

Description : Colonial, zooxanthellate and mostly extant. Colonies have most of the growth forms known for zooxanthalate corals. Corallites (except *Astreopora)* are small with septa in two cycles or less and columellae are seldom developed.

Genus ***Montipora*** de Blainville, 1830

Taxonomic references

Wells, J.W. 1954. Recent corals of the Marshall Islands. *US Geol. Survey Professional Papers*, **260**: 384-486.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Description : Colonies are submassive, laminar, encrusting or branching. Many species are conspicuous. Corallites are small. Septa are in two cycles with inwarding projecting teeth. Columellae are absent. Corallite walls and coenosteum are porous and may be highly elaborated. Tentacles are usually extended only at night.

Key Characters : No axial corallite; Corallites<2 mm diameter; Columella absent; Branches with basal structures..... Genus *Montipora.*

1. ***Montipora cebuensis*** Nemenzo, 1976, Fig. 1

Taxonomic references

Nemenzo, F 1976. Some new Philippine scleractatinian reef corals. *Nat. Appl. Sci. Bull. Univ. Philippines*, **28** : 229-276.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. *Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. Atoll Research Bulletin* **(459)** 46 pp.

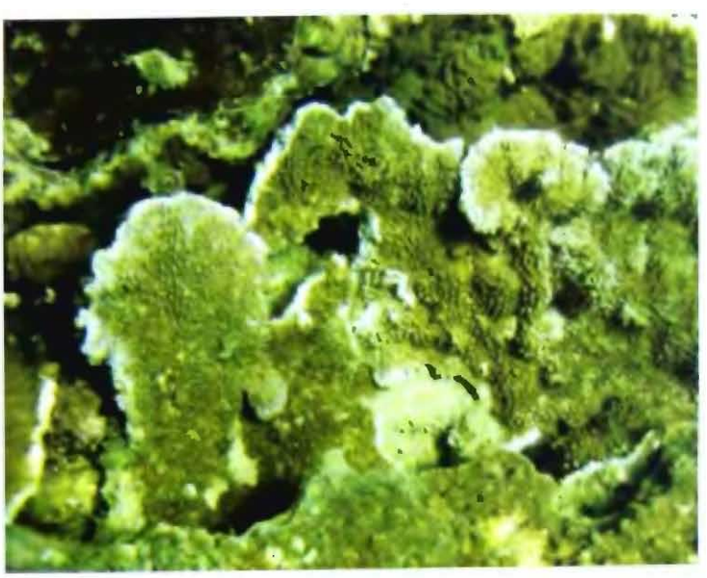


Fig. 1. *Montipora cebuensis* Nemenzo, 1976

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld Pty Ltd.*

Description : Colonies composed of contorted and dissected laminae. Coenosteum ridges are prominent. They are irregular on larger fronds, but are usually perpendicular to the margins of small fronds. Corallites occur irregularly, between the ridges.

Colour : Colonies are brown, sometimes with pale blue margins.

Key Characters : Colony dominated by laminar growth form; Radiating coenostenum ridges conspicuous; Corallites clearly visible; Corallites irregular..... *Montipora cebuensis.*

Place of Record : North Bay, South Andaman (Lat.-N-11° 42. 068' & Long. E-92° 45.116).

Distribution : Indonesia, Japan, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

2. ***Montipora flabellata*** Studer, 1901, Fig. 2

Taxonomic references

Studer, T 1901. Madreporaria von Samoa, den Sandwich-Inseln und Laysan. *Zoologische Jahrbuch Abt. Syst. Geogr.*, **14** : 388-428.

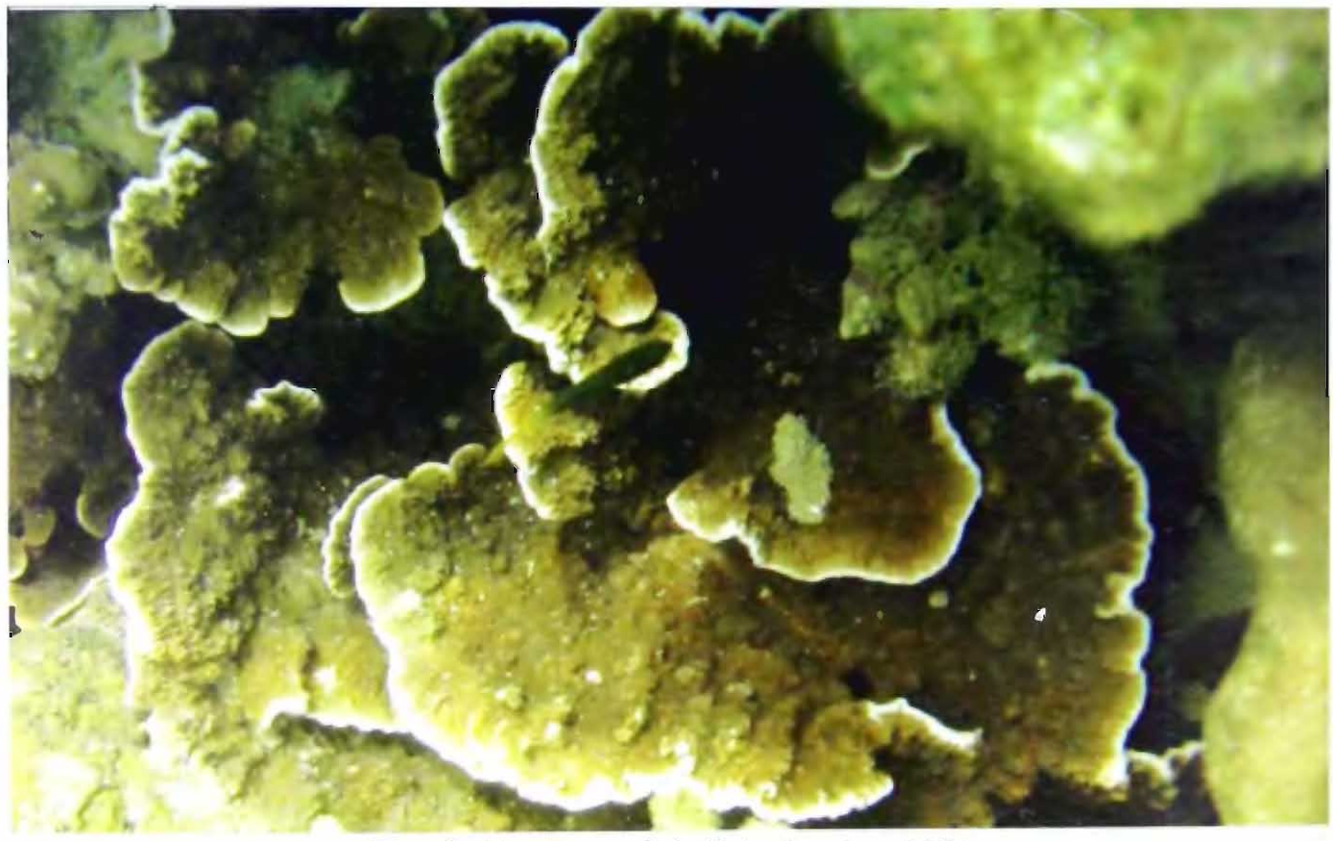


Fig. 2. *Montipora flabellata* Studer, 1901

Vaughan, T.W. 1907. Recent Madreporaria of the Hawaiian Islands and Laysan. *US National Mus. Bull.*, **59** : 427pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld Pty Ltd.*

Description : Colonies are encrusting, with irregular lobes or columns. Corallites are small. Papillae cover the colony surface and are sometimes fused and forms ridges. Septa are poorly developed.

Colour : Colonies are usually brown or blue and pale margin on the perimeter

Key Characters : Colony dominated by encrusting or massive growth form; Corallites not very small (>1 mm. diameter); Coenostenum tuberculae not prominent; Thecal papillae clearly visible; Upgrowth present; Papillae well developed; Papillae intergrade with tuberculae; Corallites distinct..... ..... *Montipora flabellata.*

Place of Record : North Bay, South Andaman (Lat.-N-11° 42. 068' & Long. E-92° 45.116).

Distribution : Mozambique, United States of America.

IUCN Red List Category and Criteria : Vulnerable.

3. ***Montipora florida*** Nemenzo, 1967 Fig. 3

Taxonomic references

Nemenzo, F. 1967. Systematic studies on Philippine shallow-water scleractinians. VI Suborder Astrocoeniina (Montipora and Acropora). *Nat. Appl .Sci. Bull. Univ. Philippines*, **20** : 1-141.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **(459)** : 46.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld Pty Ltd.*

Description : Colonies are composed of thin, unifacial laminae and forming upright whorls. These whorls may be over one metre high

Fig. 3. *Montipora florida* Nemenzo, 1967

and may cover a large area. The coenosteum is rough with small coenosteum papillae. Most of the corallites are immersed; others are small and immersed on tuberculae.

Colour : Colonies are pale brown or greenish.

Key Characters : Colony dominated by laminar growth form; Radiating coenostenum ridges not conspicuous; Tuberculae or papillae present; Tuberculae and papillae inconspicuous ..... *Montipora florida.*

Place of Record : North Bay, South Andaman (Lat.-N-11° 42. 068' & Long. E-92° 45.116)

Distribution : Indonesia, Malaysia, Papua New Guinea, Philippines and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

4. ***Montipora verruculosus*** Veron, 2000, Fig. 4

Taxonomic references

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **1** : 136.

Description : Colonies are thick, flat, usually horizontal plates up to 2 metres across. Plates are covered with dome-shaped verrucae which are of very uniform size and uniformly spaced. Verrucae are not aligned as radiating ridges except within 50 mm of plate margins. Corallites are small, immersed and crowded between the verrucae.

Fig. 4. *Montipora verruculosus* Veron, 2000

Colour : Colonies are grey in colour

Key Characters : Colony dominated by distinctive corallite or coenostenum characters; Corallites not funnel shapped; Coenostenum forms varrucae; Colonies form flat plates; Varrucae fused into ridges; Plate margins only have ridges ..... *Montipora verruculosus.*

Place of Record : Pongibalu, South Andaman (Lat.-N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Australia, Indonesia, Malaysia, Papua New Guinea, Philippines and Solomon Islands.

IUCN Red List Category and Criteria : Vulnerable.

5. ***Montipora hemispherica*** Veron, 2000, Fig. 5

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld Pty. Ltd.*, **1** : 147.

Description : Colonies are usually encrusting but may be hemispherical. Colour was pale brown. Flattened, contorted branches usually occur near the centre of laminae and cover the surface of large colonies. Corallites are immersed. Papillae, grading into tuberculae, are most prominent on laminae; on branches they may be fused into short ridges. The coenosteum is coarse.

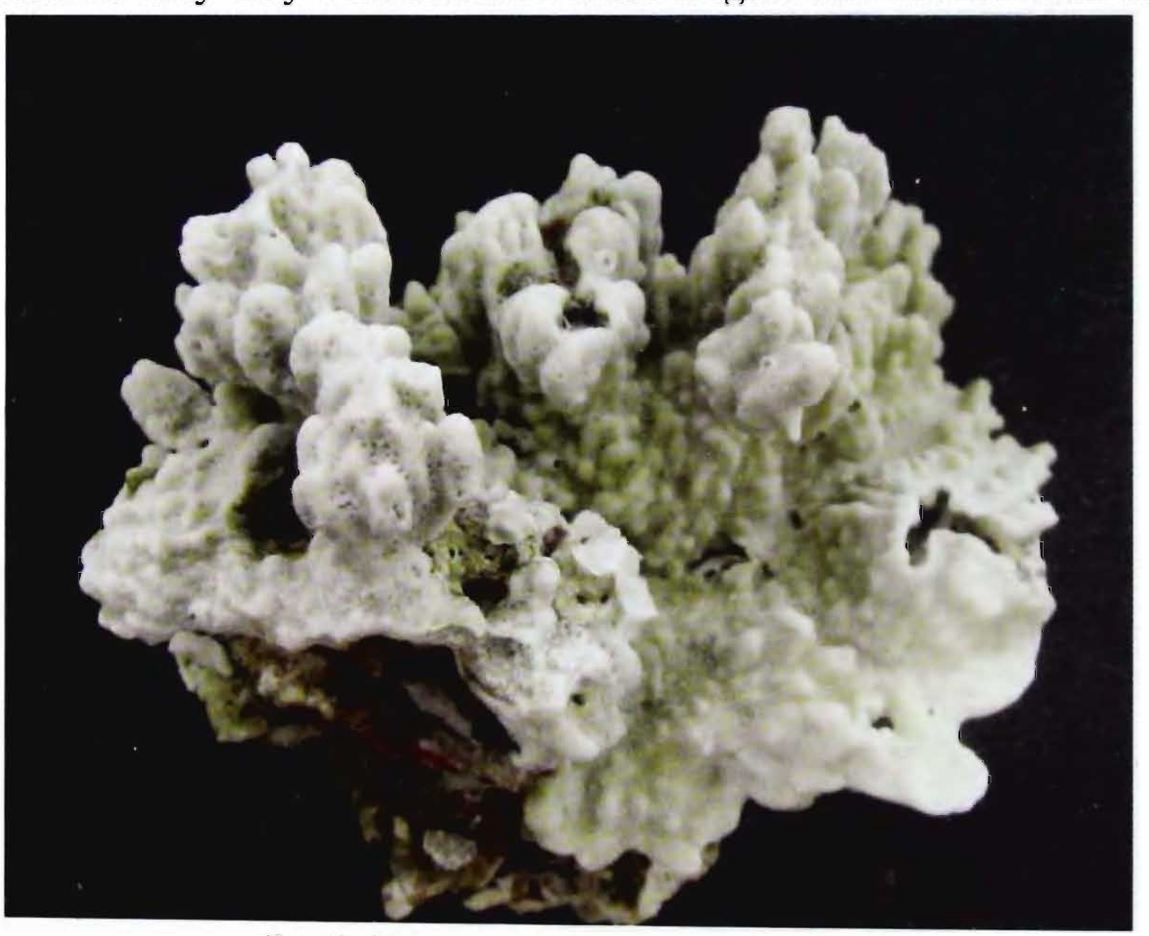


Fig. 5. *Montipora hemispherica* Veron, 2000

Colour : Grey and pale brown.

Key Character : Colony dominated by branching growth form; Branches thick; Branches not submassive; Branches short and fused .... *Montipora hemispherica.*

Place of Record : Arial Bay, North Andaman (Lat. N-13°16.093' & Long. E -93°02.433').

Distribution : Egypt.

IUCN Red List Category and Criteria : Data Deficient.

6. ***Montipora grisea*** Bernard, 1897, Fig. 6

Taxonomic references

Bernard, H.M. 1896. Catalogue of the Madreporarian corals of the British Museum (Natural History). II. The genus *Turbinaria*. The genus *Astraeopora* London.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. *Appendix* (pp. 13-46) *in S.D. Cairns, Species richness of Recent Scleractinia. Atoll Research Bulletin*, (**459**) : 46.

Veron, J.E.N. and Wallace, C. 1984. *Scleractinian of Eastern Australia. Part 5 Family Acroporidae. Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

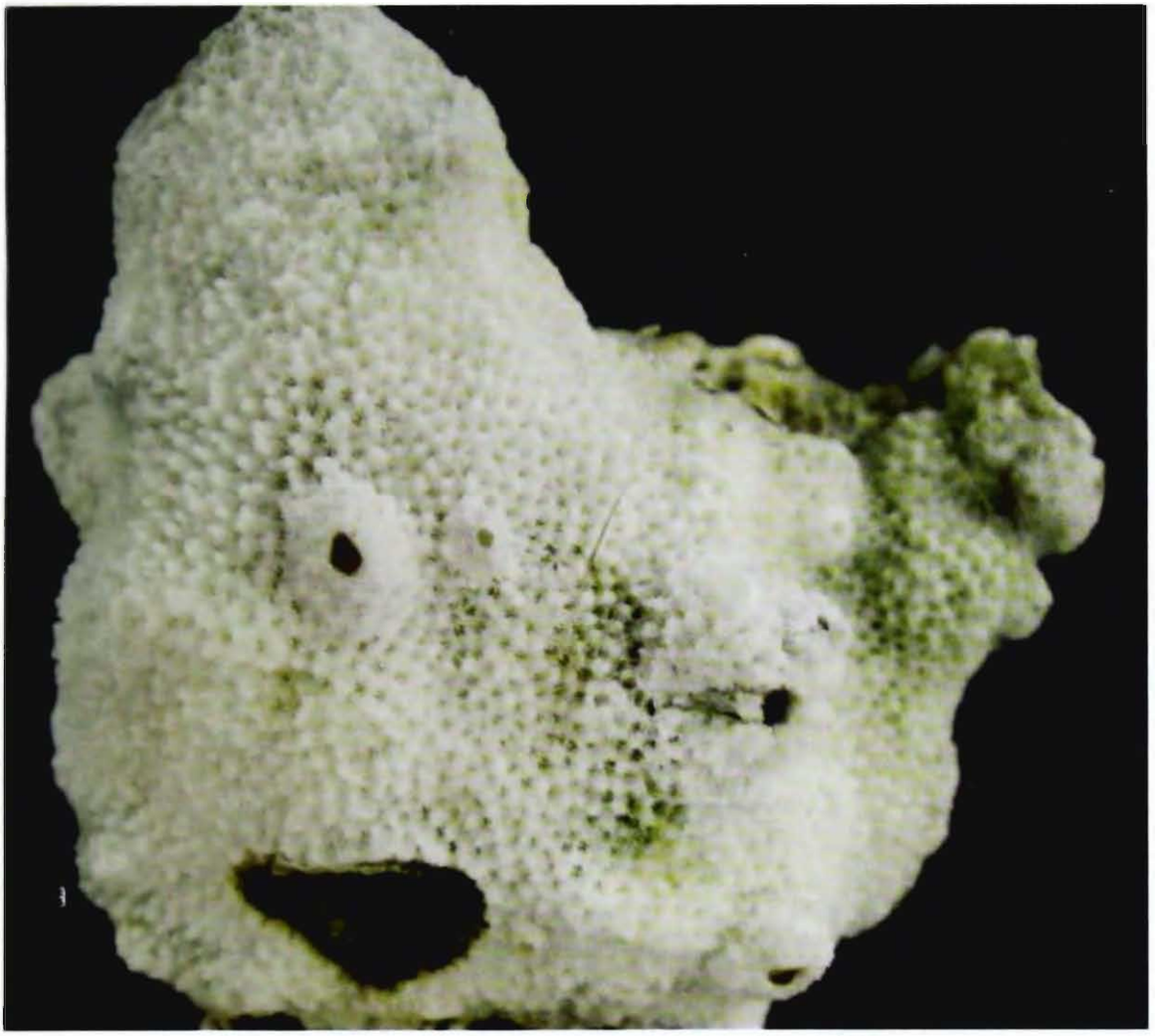


Fig. 6. *Montipora grisea* Bernard, 1897

Description : Colonies are massive, encrusting, or are thick unifacial plates. Corallites are slightly exert, surrounded by partly fused thecal papillae. Coenosteum papillae are also present.

Colour : Usually dark brown or green but may be pale colours or bright blue or pink.

Key Character : Colony dominated by encrusting or massive growth form; Corallites not very small; Coenosteum tuberculae not prominent; Thecal papillae clearly visible; Upgrowths absent; Corallites exert; Corallites not ; large; Colonies massive ..... *Montipora grisea.*

Place of Record : Smith Island, North Andaman, (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution : American Samoa, Australia, Cocos (Keeling) Islands, Fiji, Indonesia, Japan, Kiribati, Madagascar Mauritius, Papua New Guinea, Philippines, Pitcairn, Samoa, Solomon Islands , Taiwan, Province of China, Tonga, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

7 ***Montipora delicatula*** Veron, 2000, Fig. 7

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR. Qld. Pty.*

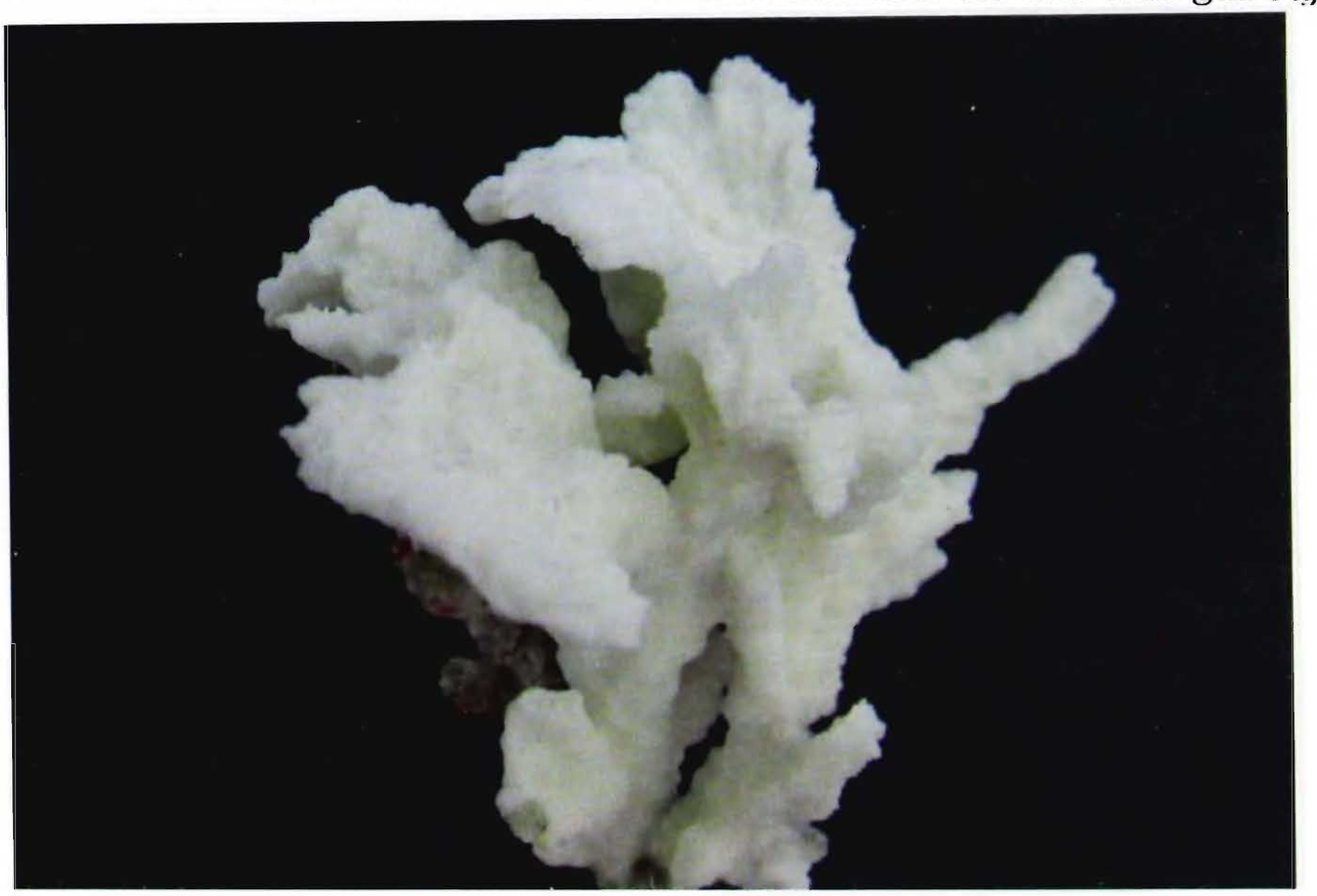


Fig. 7. *Montipora delicatula* Veron, 2000

Description : Colonies are composed of very thin unifacial laminae which are usually contorted. Corallites are inconspicuous, in rows between coenosteum ridges. Coenosteum ridges are irregular

Colour : Pale brown colour and that was paler towards colony margins.

Key Character : Colony dominated by laminar growth form; Radiating coenosteum ridges conspicuous; Corallites barely visible; Laminae flat .... *Montipora delicatula.*

Place of Record : Smith Island, North Andaman, (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution : Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

8. ***Montipora porites*** Veron, 2000, Fig. 8

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR. Qld. Pty. Ltd.*, **1** : 162.

Description : Colonies have encrusting bases and irregular branches which seldom fuse. Branching may be open or compact. Coenostenum ridges are very prominent and form a sinuous pattern over branch surfaces. Corallites are deeply embedded between the ridges. The skeletal structure of the corallites is *Porites* –like, with very elongate septa which occasionally fuse.

Colour : Grey or green with pale coenostenum ridges.

Fig. 8. *Montipora porites* Veron, 2000

Key character : Branches twig-like; Branches predominantly straight; Coenostenum forms ridges; Branches with rounded ends; Corallites deeply pitted ..... *Montipora porites.*

Place of Record : Rutland Island, South Andaman (Lat. N-11°24.314' & Long. E-92°39.780').

Distribution : Australia, Indonesia, Japan; Malaysia, Papua New Guinea, Philippines, Singapore, Solomon Islands, Taiwan, Province of China, Thailand and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

9. ***Montipora taiwanensis*** Veron, 2000, Fig. 9

Taxonomic reference

Veron, J.E.N. 2000. Corals of the world. *Australian Inst. Mar. Sci. and CRR. Qld. Pty. Ltd.*, **1** : 132.

Description : Colonies are robust and conspicuous, encrusting to submassive. The surface is covered with contorted, irregular large varrucae. The varrucae are not fused into any pattern. Corallites are large and conspicuous.

Colour : Pale brown or purple.

Fig. 9. *Montipora taiwanensis* Veron, 2000

Key Characters : Colony dominated by distinctive corallites or coenosteum characters; Corallites not funnel shaped; Coenosteum forms verrucae; Colonies sub-massive; Verrucae forms interlocking ridges ..... *Montipora taiwanensis.*

Place of Record : Rutland Island, South Andaman (Lat. N-11°24.314' & Long. E-92°39.780').

Distribution : Indonesia, Japan, Malaysia, Philippines, Taiwan, Province of China and Viet Nam.

IUCN Red List Category and Criteria : Data Deficient.

Genus ***Anacropora*** Ridley, 1884

Taxonomic references

Pillai, C.G.S. 1973. A review of the genus Anacropora Ridley, (Scleractinia, Acroporidae) with the description of a new species. *J. Mar. Biol. Assoc. India*, **15** : 296-301.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Description : Colonies are arborescent with thin tapered branches, without axial corallites. All corallites are radial and are small and immersed. Septa are in two cycles in inward projecting teeth. Columellae are absent. Corallite walls and the coenosteum are porous, without elaborations. Corallites often have projecting lower lips, which may develop into prominent spines. Polyps are widely spaced and small, with fine tentacles commonly extended during the day.

Key Characters : No axial corallite; Corallites<2 mm diameter, columella absent; Branches without basal structures ..... Genus *Anacropora.*

10. ***Anacropora reticulata*** Veron and Wallace, 1984, Fig. 10

Taxonomic references

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Branches are widely spaced, up to 14 millimetres thick and tapered, with blunt tips. The coenosteum is composed of fine rows of fused spinules (visible underwater) forming a reticulate pattern. Corallites have a prominent lower lip and may be aligned in down branches.

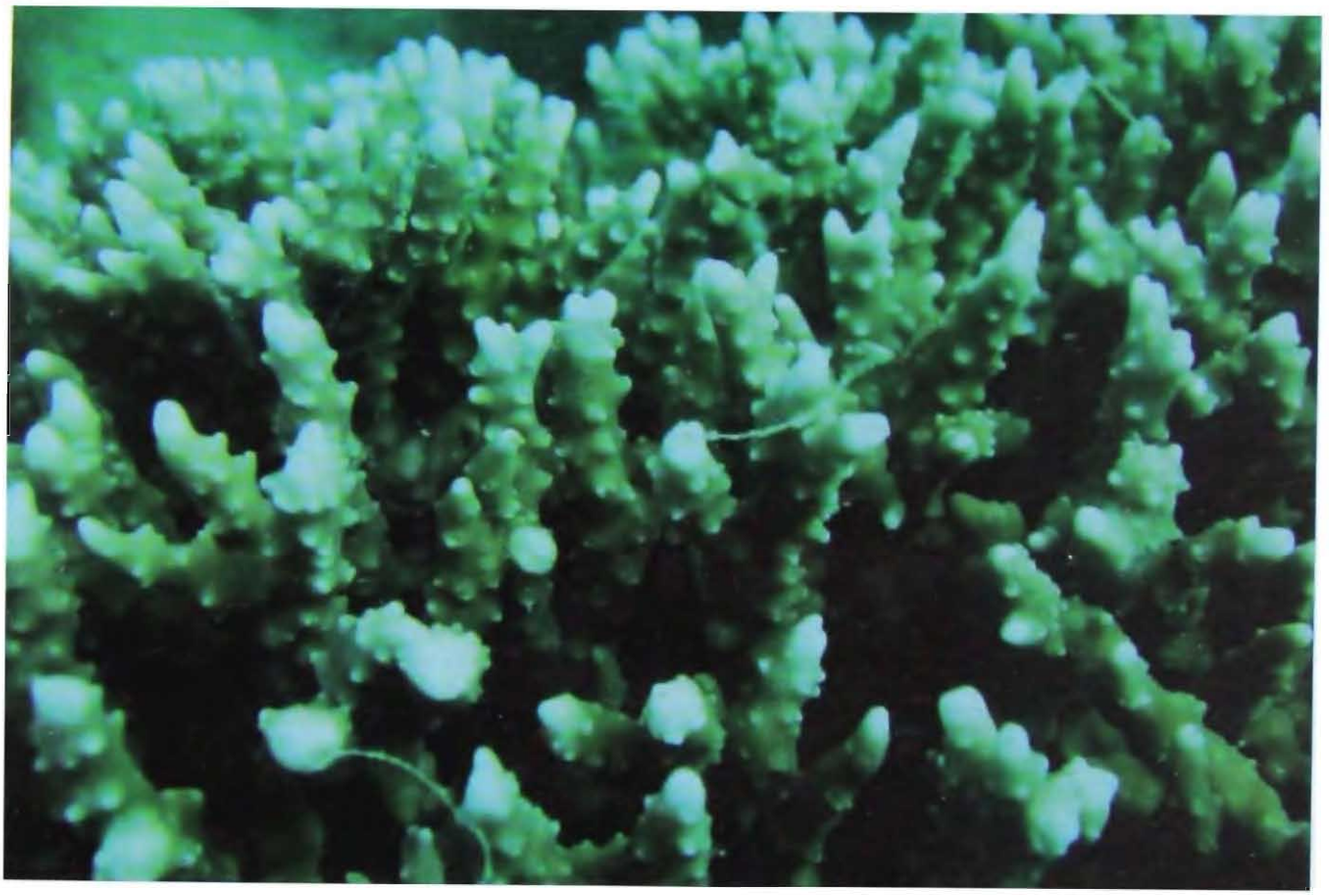


Fig. 10. *Anacropora reticulata* Veron and Wallace, 1984

Colour : Pale brown.

Key Characters : Branches robust (>10 mm. thick); Tips blunt; Coenostenum coarse, reticulate ..... *Anacropora reticulata.*

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116).

Distribution : Australia, Indonesia, Japan, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Vanua.

IUCN Red List Category and Criteria : Vulnerable.

Genus ***Acropora*** Oken, 1815

Taxonomic references

Wallace, C. 1978. The coral genus *Acropora* (Scleractinia : Astrocoeniina : Acroporidae) in the central and southern Great Barrier Reef Province. *Men. Queensland Mus.*, **18** : 273-319.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Wallace, C. and Wolstenholme, J. 1998. Revision of the coral genus *Acropora* (Scleractinia : Astrocoeniina : Acroporidae)from Indonesia. *Zool. J. Linnean Soc.*, **123** : 199-384.

Wallace, C. 1999. Staghorn corals of the world. *CSIRO Publ., Melbourne*, 422 pp.

Description : Colonies are usually branching, bushy or plate like, rarely encrusting or submassive. Corallites are of two types axial and radial. Septa are usually in two cycles. Columellae are absent corallite walls and the coenosteum are porous. Tentacles are usually extended at night.

Key Characters : Axial corallites on branch ends ..... Genus *Acropora.*

11. ***Acropora copiosa*** Nemenzo, 1967, Fig. 11

Taxonomic references

Nemenzo, F. 1967 Systematic studies on Philippine shallow-water scleractinians. VI Suborder Astrocoeniina (*Montipora* and *Acropora*). *Nat. Appl. Sci. Bull. Univ. Philippines*, **20** : 1-141.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix pp. 13-46. in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin* **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are clumps of prostate or upright branches. They have irregular branching patterns with frequent sub-branches. Axial corallites are small. Radial corallites are crowded, tubular, appressed, and are irregular in size and shape.

Colour Brown and pinkish brown

Key Characters : Colony with axial corallites; Colony with branches dominant; Branches middle sized; Branches staghorn-like; Axial corallites not large; Radial coarallites of different sizes ..... *Acropora copiosa.*

Fig. 11. *Acropora copiosa* Nemenzo, 1967

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116).

Distribution : Indonesia, Japan, Madagascar, Philippines, Solomon Islands, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Data Deficient.

12. ***Acropora horrida*** Dana, 1836, Fig. 12

Taxonomic references

Dana, J.D. 1846. Zoophytes. United States Exploring Expedition during the years 1831-1842 under the command of Charles Wilkes, **8** : 1-740. Lea and Blanchard, Philadelphia.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5. Family Acroporidae. *Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Cairns, S.D. 1991. Catalog of the type specimens of stony corals (Milleporidae, Stylasteridae, Scleractinia) in the National Museum of Natural History, Smithsonian Institution. *Smithsonian Contributions to Zoology* (**514**) 59 pp.

Wallace, C. 1999. *Staghorn corals of the world.* CSIRO Publ, Melbourne. 422 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin* (**459**) 46pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. Australian Institute of Marine Science and CRR Qld Pty Ltd.

Description : Colonies are arborescent with open branches. Axial corallites are prominent, but not exert, incipient axial corallites are many around the axial corallite. Radial Corallites are irregular and mixture of size. Branches are thin and usually slightly curved. Tentacles are usually extended during the day.

Colour : Colour usually pale pink, polyps are pale blue or white.

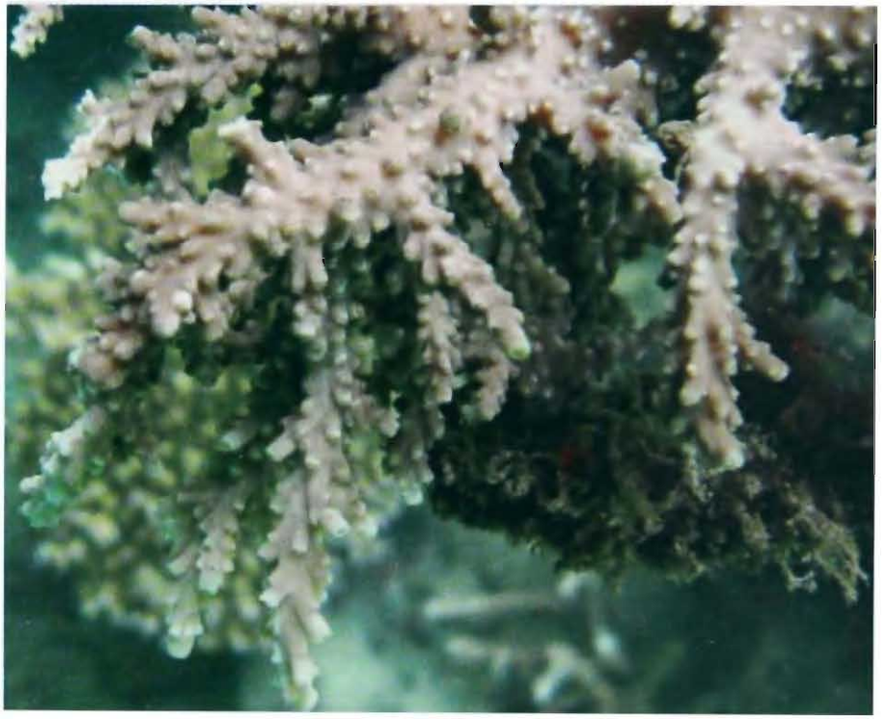


Fig. 12. *Acropora horrida* Dana, 1836

Key Characters : Colony with axial corallites; Colony with branches dominant; Branches middle sized; Branches interlocking vertically; Radial corallites irregular; Coenostenum coarse; Branches compact .... *Acropora horrida.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : American Samoa, Australia, British Indian Ocean Territory, Cook Islands, Djibouti, Egypt, Fiji, French Polynesia, Indonesia, Japan, Kenya, Kiribati, Madagasca, Malaysia, Maldives, Marshall Islands, Mauritius, Mozambique, New Caledonia, Oman, Papua New Guinea, Philippines, Solomon Islands, South Africa, Taiwan, Province of China, Thailand, Tonga, Tuvalu, United Arab Emirates, United Republic of Tanzania and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

13. ***Acropora mirabilis*** Quelch, 1886, Fig. 13

Synonym

Madrepora mirabilis Quelch, 1886

Taxonomic references

Quelch, J.J. 1886. Report on the reef corals collected by HMS Challenger during the year 1873-1876. Rept. Sci. Results Voyage of HMS Challenger. *Zoology*, **3** : 203 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) 46 pp.

Fig. 13. *Acropora mirabilis* Quelch, 1886

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld Pty. Ltd.*

Description : Colonies are corymbose plates. Branchlets are tall, straight and tapered. Axial corallites are prominent with thick wall but not exert. Radial corallites are short and uniform in size arranged in rows.

Colour : Colonies are uniform grey.

Key Characters : Colony forms clumps, branchlets well developed; Radial corallites appressed; Colony cushion-like plates; Branches and sub-branches intergrade ..... *Acropora mirabilis.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Indonesia, Japan, Madagascar, Mauritius, Philippines and Vanuatu.

IUCN Red List Category and Criteria : Data Deficient.

14. ***Acropora plantaginea*** Lamarck, 1816, Fig. 14

Synonym

Madrepora plantaginea Lamarck, 1816

Taxonomic references

Lamarck, J.B.P. 1816. *Historie des animaux sans vertebres.* Verdiere, Paris, **2** : 568 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are small and corymbose, forming compact bushes. Colour of the coral was yellow –brown. Axial corallites are dome-shaped and short in structure but conspicuous. Radial corallites are thick walled, short and mostly appressed but sometimes becoming elongate tubes on the sides of branches.

Colour : Brownish-yellow branches end with pink axial polyp.

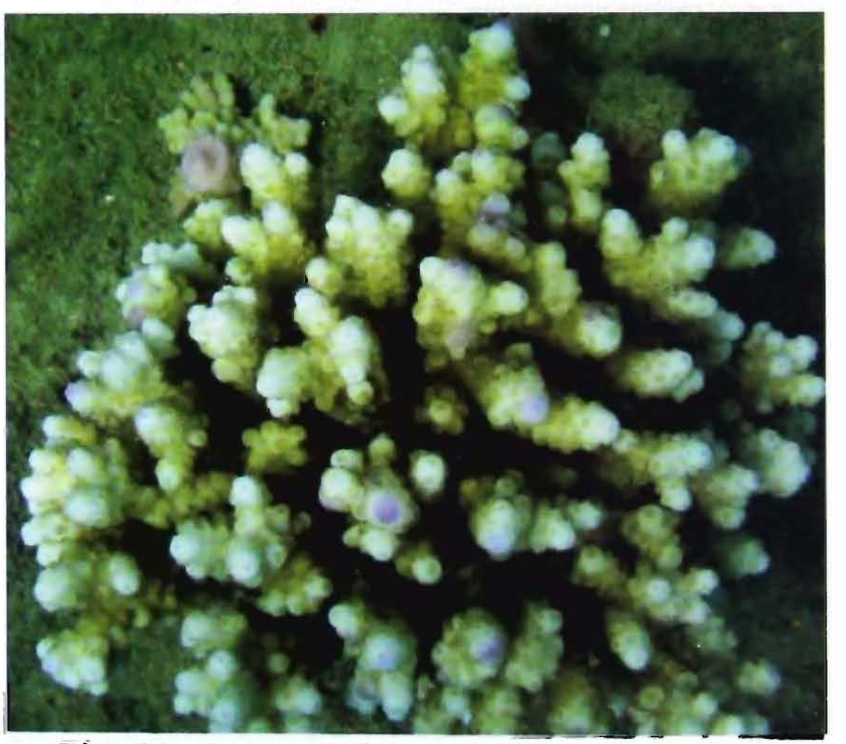


Fig. 14. *Acropora plantaginea* Lamarck, 1816

Key Character : Axial; corallites not dominating; Radial corallites conspicuous; Axial corallites dime-shaped; Axial and radial corallites similar; Radial corallites crowded ..... *Acropora plantaginea.*

Place of Record : Smith Island, North Andaman (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution : Egypt and Madagascar.

IUCN Red List Category and Criteria : Data Deficient.

15. ***Acropora roseni*** Wallace, 1999, Fig. 15

Taxonomic references

Wallace, C. 1999. *Staghorn corals of the world.* CSIRO Publ, Melbourne. 422 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are prostrate and up to 2 metres across. Branches are mostly contorted and irregularly fused except towards the periphery of large colonies where they are relatively well defind and have upturned ends. Branches from the central and peripheral parts of the same colony have dissimilar shapes. Axial corallites are only distinguishable on well defind peripheral branches. Elsewhere axial, incipient axial and radial corallites are a confusion of different shapes and sizes and face different directions. The coenosteum is coarse.

Colour : Dull greenish-brown.

Key Characters : Colony with axial corallites; Colony with branches dominant; Radial corallites exsert; Branches large; Branches staghorn-like; Branches becoming prostrate; Radial corallites rasp-like; Colony mostly branching; Centre of colony branching; Branches contoeted..... *Acropora roseni.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066').

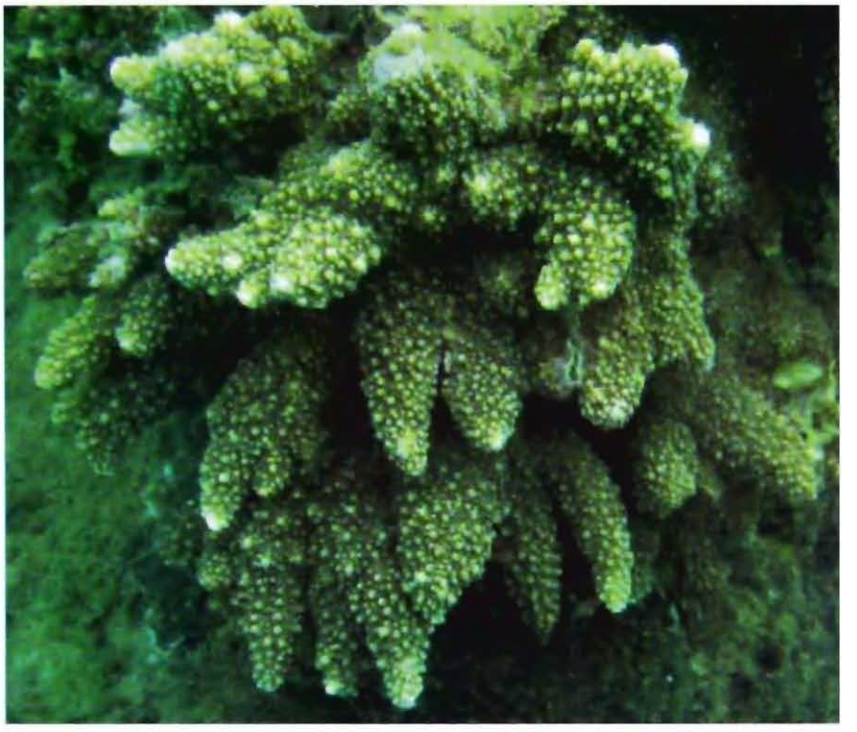


Fig. 15. *Acropora roseni* Wallace, 1999

Distribution : Madagascar and Seychelles.

IUCN Red List Category and Criteria : Endangered.

16. ***Acropora torresiana*** Veron, 2000, Fig. 16

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **1** : 316.

Description : Colonies are digitate. Branches are uniform and straight or slightly curved. Sub branches are only formed near the base of main branches. Axial corallites are well dome shaped but, prominent. Radial corallites are short and tubular, of uniform size and are nearly arranged in rows down the sides of branches.

Colour : Pale brown with white corallite openings

Key Characters : Colony digitate; Colony forms clumps; Branches finger-like; Branches elongate, with sub-branches; Radial corallites of uniform size ..... *Acropora torresiana.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066').

Distribution : Australia.

IUCN Red List Category and Criteria : Data Deficient.

Fig. 16. *Acropora torresiana* Veron, 2000

17 ***Acropora variolosa*** Klunzinger, 1879, Fig. 17

Synonym

Madrepora variolosa Klunzinger, 1879

Taxonomic references

Klunzinger, C.B. 1879. Die Korallthiere des Rothen Meeres., **2** : Die Steinkorallen. 1. Die Madreporaceen und Oculinaceen. Gutmann. Berlin.

Wallace, C. 1999. *Staghorn corals of the world.* CSIRO Publ, Melbourne, 422 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description Colonies are of open thickets of sturdy tapered upright branches. Axial corallites are large slightly exert and dome shaped. Radial corallites are of mixed sizes, the largest being tubular and exert, with thick walls and small openings, small corallites are immersed between the large corallites. The coenosteum is fine.

Fig. 17. *Acropora variolosa* Klunzinger 1879

Colour Colonies are brown purple with pale tips.

Key Characters : Colony with axial corallites; Colony with branches dominant; Radial corallites exert; Branches large; Branches irregular· Branches elongate, straight; Radial corallites very variable .... *Acropora variolosa.*

Place of Record : Chidyatapu, South Andaman (Lat. N-11° 29. 460' & Long. E-92° 42.530').

Distribution Madagascar, Saudi Arabia and Sudan.

IUCN Red List Category and Criteria : Least Concern.

18. *Acropora verweyi* Veron and Wallace,1984, Fig. 18

Taxonomic reference

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Wallace, C. 1999. *Staghorn corals of the world.* CSIRO Publ, Melbourne, 422 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) 46 pp.

Veron, J.E.N. 2000. Corals of the world **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies form encrusting plates with short branches sometimes forms extensive corymbose bushes. Branches are 7-9 mm thick, do not taper and have short branchlets towards their bases. Axial corallites are tubular with thick walled and prominent. Radial corallites are rounded, tubular and appressed, and arranged in rows.

Colour : Uniform creamy white with yellow axial corallites.

Key Characters : Colony forms plate-like bushes; Axial corallites not dominating; Radial corallites conspicuous; Axial corallites dome-shaped; Axial and radial corallites distinct ..... *Acropora verweyi.*

Place of Record : Sister Island (Lat. N-10° 55. 830' & Long. E-92° 07.023'E).

Distribution : American Samoa, Australia, Comoros, Cook Islands, Fiji, French Polynesia, Guam, Indonesia, Japan, Kiribati, Madagascar, Marshall Islands, New Caledonia, Niue, Papua New Guinea, Philippines, Pitcairn, Samoa, Seychelles, Singapore, Solomon Islands, Taiwan, Province of China, Thailand, Tonga, United Republic of Tanzania, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria Vulnerable.

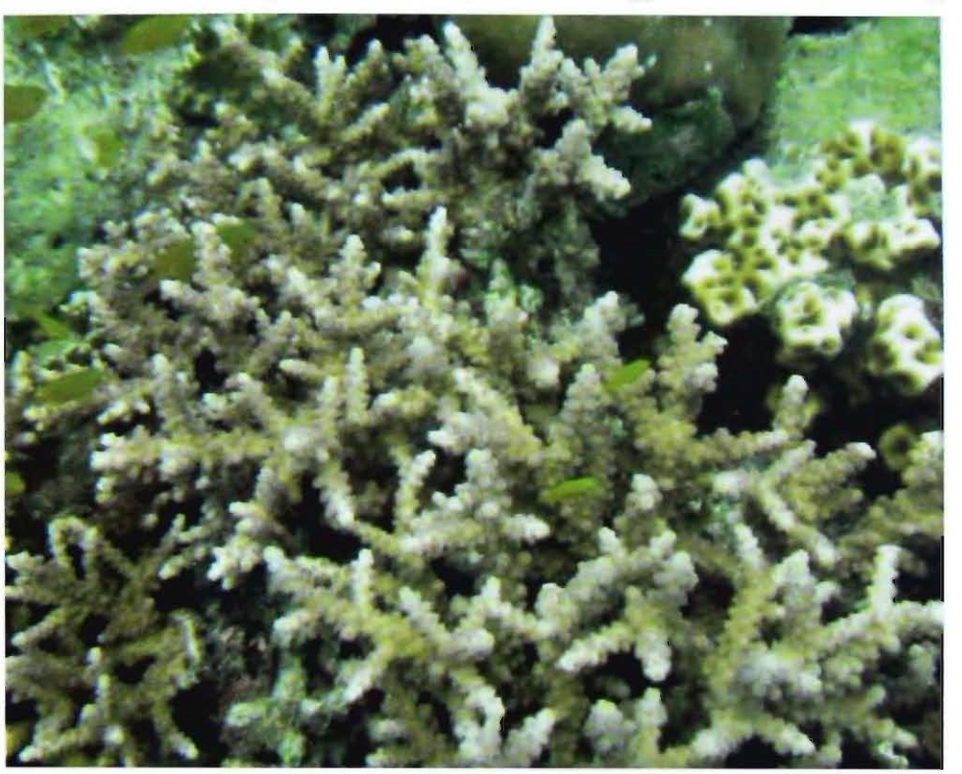


Fig. 18. *Acropora verweyi* Veron and Wallace, 1984

19. ***Acropora inermis*** (Brook, 1891), Fig. 19

Synonym

Madrepora inermis Brook, 1891

Taxonomic reference

Brook, G. 1891. Descriptions of new species of Madreporaria in the British Museum. *Ann. Mag. Nat. Hist.*, **10** : 451-465.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are usually open branched, becoming bushy on upper reef slopes. Main branches may have compact branchlets giving colonies a bushy appearance. Corallites are widely spaced and vary greatly in size, the largest being appressed and tubular The coenosteum is fine, giving branches a smooth appearance.

Colour : Colour of the colonies is brownish with a pale branch tips.

Key Character : Colony with axial corallites; Colony with branches dominant; Radial corallite exsert; Branches fine; Branches tubular; Branch straight; Radial corallites tubular· Branching pattern compact .... *Acropora inermis.*

Fig. 19. *Acropora inermis* (Brook, 1891)

Place of Record : Smith Island, North Andaman (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution : French Polynesia, Indonesia, Japan, Madagascar and Solomon Islands.

IUCN Red List Category and Criteria : Data Deficient.

20. ***Acropora sekiseiensis*** (Veron, 1990), Fig. 20

Taxonomic references

Veron, J.E.N. 1990a. New Scleractinian from Japan and other Indo-West Pacific Countries. *Galaxea*, **9** : 95-173.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies have irregularly prostrate branches with short sub-branches and may form extensive thickets. Axial corallites are hardly distinguishable from radial corallites. Radial corallites are very elongate and tubular and are curved, with sharp edges. Many form incipient axial corallites giving branches a spiky surface.

Colour : Brown.

Fig. 20. *Acropora sekiseiensis* (Veron, 1990)

Key Character : Colony with axial corallites; Colony with branches dominant; Radial corallite exsert; Branches interlock horizontally; Branches straight; Axial corallites not distinctive ..... *Acropora sekiseiensis.*

Place of Record : Smith Island, North Andaman (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution Indonesia, Japan, Papua New Guinea and Philippines.

IUCN Red List Category and Criteria : Data Deficient.

21. ***Acropora gomezi*** Veron, 2000, Fig. 21

Taxonomic references

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **1** : 408.

Description : Colonies are arborescent with straight tapered branches forming thickets. Sub-branches form at abtuse angles. Axial corallites are prominent and tubular Radial corallites are small and curved near branch tips, becoming tubular further down branches where they project perpendicularly and are only slightly curved. These become incipient axial corallites which have small pocket-shaped radial corallites around their bases. All corallites have thick walls with rounded openings. It is pale brown with white axial corallites.

Colour Pale brown with white axial corallites.

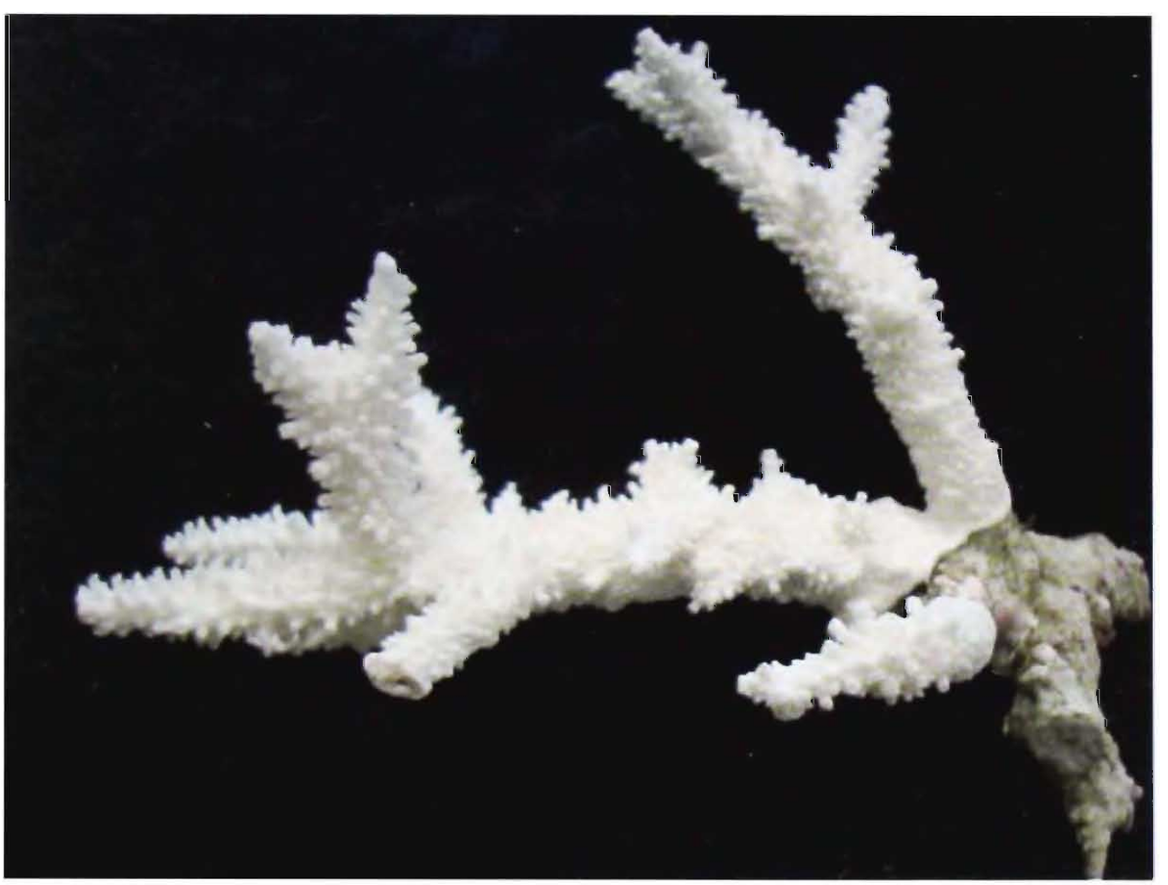


Fig. 21. *Acropora gomezi* Veron, 2000

Key Character : Colony thicket like; Radial corallites vary down branches ..... *Acropora gomezi.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066').

Distribution : Australia, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, Solomon Islands and Thailand.

IUCN Red List Category and Criteria : Data Deficient.

22. ***Acropora kimbeensis*** Wallace, 1999, Fig. 22

Taxonomic references

Wallace, C. 1999. *Staghorn corals of the World.* CSIRO Publ., Melbourne, 422 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR. Qld. Pty. Ltd.*

Description : Colonies are compact clumps or bushes. Branches are fine, upright, tapered and irregularly fused. Branchlets develop from incipient axial corallites and are evenly spaced. Axial corallites are small, although well defined. Radial corallites are tubular and appressed with small openings (less than 1 mm diameter).

Colour : Uniform Yellow, cream or blue.

Fig. 22. *Acropora kimbeensis* Wallace, 1999

Key Character : Colony forms clumps, branchlets well developed; Radial corallites appressed Colony not cushion like plates; Brachlets come from branches ..... *Acropora kimbeensis.*

Place of Record : Smith Island, North Andaman (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution : Indonesia, Japan, Papua New Guinea, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

23. ***Acroporo haimei*** (Milne Edwards & Haime, 1860), Fig. 23

Taxonomic references

Scheer, G. and Pillai, C.G.S. 1983. Report on the stony corals from the Red Sea. *Zoologica*, (Stuttgart) **133** : 99 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies consist of dense thickets of short upright tapered branches. Colonies may form extensive single-species stands in shallow water Axial corallites are exsert and tubular Radial corallites are irregular in size and tubular with sharp-edged lips.

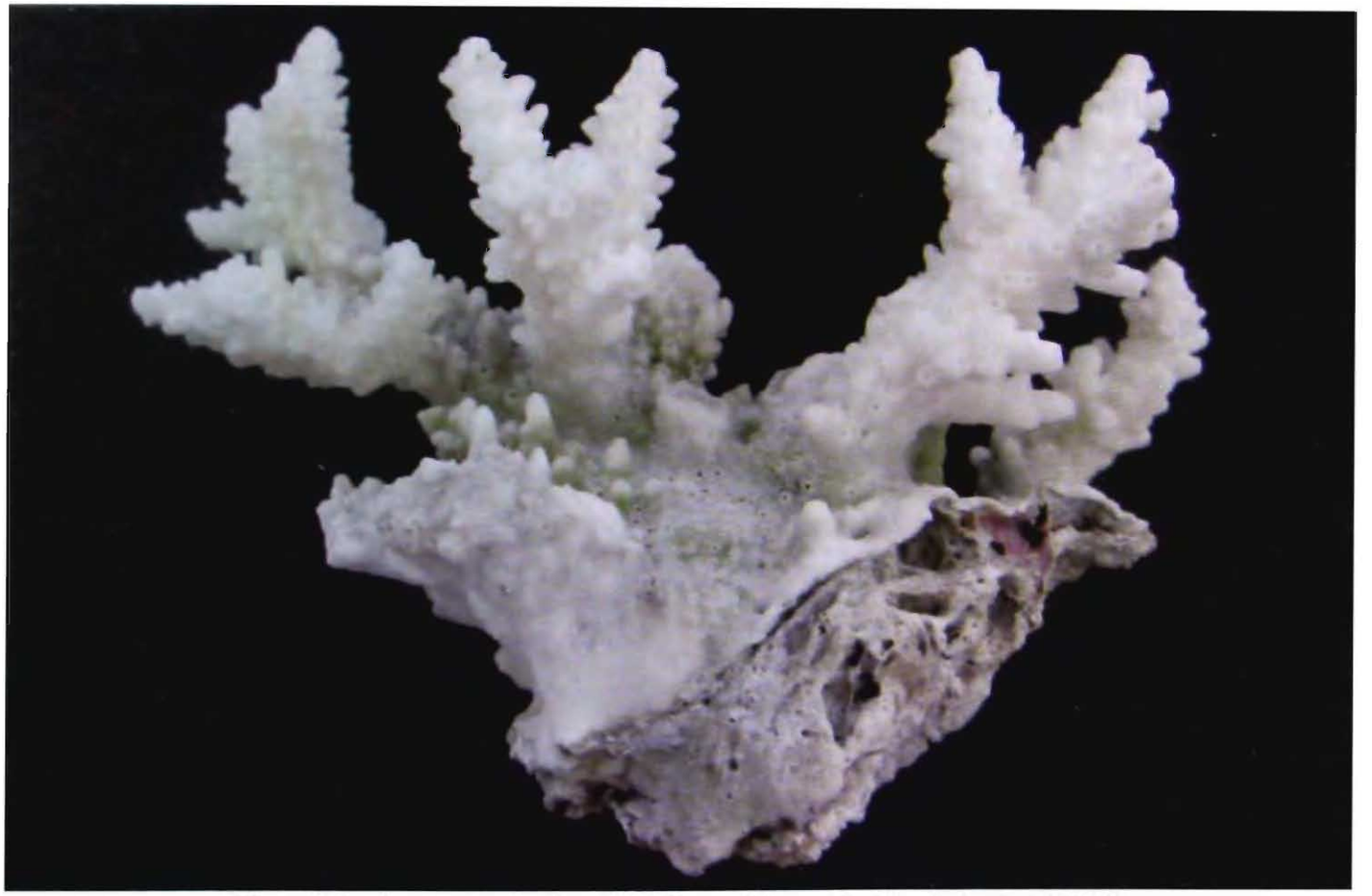


Fig. 23. *Acroporo haimei* (Milne Edwards & Haime, 1860)

Colour : Uniform pale or dark brown.

Key Character. Colony with axial corallites; Colony with branches dominant; Branches middle sized; Branches interlocking vertically; Radial corallites sharp-edged; Braches straight; Radial corallites with sharp lower lips; Radial corallites of one size ..... *Acropora haimei.*

Place of Record : Smith Island, North Andaman (Lat. N-13°18.406' & Long. E-93°04.207').

Distribution : Madagascar and Viet Nam.

IUCN Red List Category & Criteria : No entries found.

24. ***Acropora tanegashimensis*** Veron, 2000, Fig. 24

Taxonomic references

Veron, J.E.N. 1990. New Scleractinian from Japan and other Indo-West Pacific Countries. *Galaxea*, **9** : 95-173.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **459** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld Pty Ltd.*

Description : Colonies consist of interlocking horizontal branches 9-11 millimeters thick, forming solid plates. Branches are short and thick. Axial

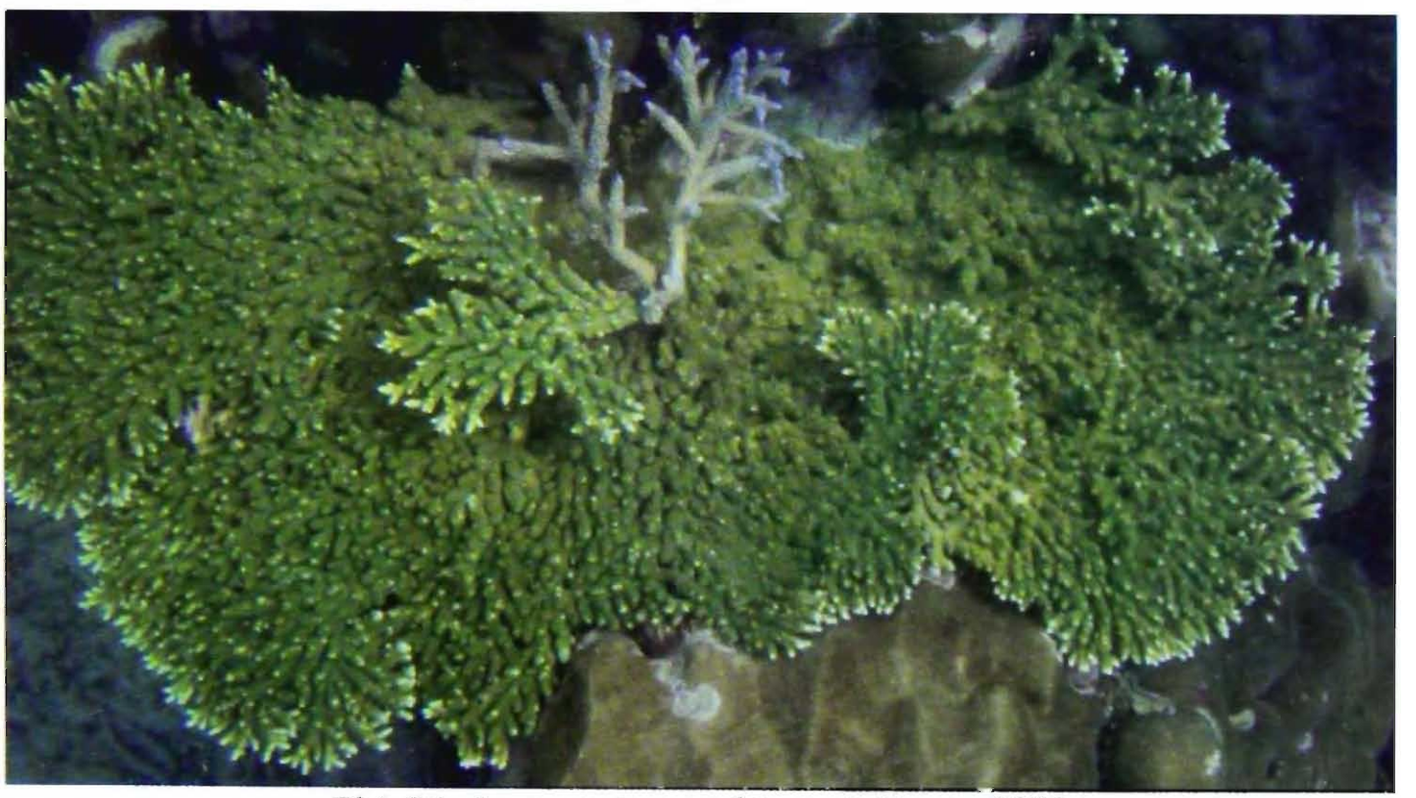


Fig. 24. *Acropora tanegashimensis* Veron, 2000

corallites are hardly distinguishable. Radial corallites are crowded, cup shaped and form rosette.

Colour : Brown or greenish brown.

Key Characters : Colony plate like; Branches fine; Corallite and branchlets distinct; Axial; Corallite indistinct ..... *Acropora tanegashimensis.*

Place of Record : Neil Island, Ritchie's Archipelago (Lat. N-11°50.165' & Long. E-93°01.846').

Distribution : Japan and Philippines.

IUCN Red List Category and Criteria : Data Deficient

25. ***Acropora desalwii*** (Wallace, 1994), Fig. 25

Taxonomic references

Wallace, C.C. 1994. New species and a new species group of the coral genus *Acropora* from Indo-Pacific locations. *Invertebrate Taxonomy*, **8** : 961-988.

Wallace C. 1999. *Staghorn corals of the World.* CSIRO Publ., Melbourne, 422 pp.

Cairns, S.D., Hoeksema, B. W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld Pty Ltd.*

Description : Colonies are corymbose plates with crowded branchlets. Branchlets at the colony perimeter are mostly horizontal and distinct from those from the rest of the colony. Branchlets may have more than one axial corallite. Axial corallites and incipient axial corallites are long, tubular and upright, except towards plate margins where they are similar to radial corallites.

Colour : Pale brown, blue or green, usually with disticnt colouration of the colony margin.

Fig. 25. *Acropora desalwii* (Wallace, 1994)

Key Character : Colony forms plates; Branchlets with multiple axial corallites; Axial and radial corallites similar· Peripheral branchlets outwardly inclined; Radial corallites with rounded lips ..... *Acropora desalwii.*

Place of Record : Kondul Island, Nicobar (Lat. N-07°10.023' Long. E-93°42.949).

Distribution : Indonesia, Papua New Guinea, Philippines and Solomon Islands.

IUCN Red List Category and Criteria : Data Deficient.

26. ***Acropra massawensis*** Marenzeller 1906, Fig. 26

Taxonomic references

Marenzeller, von E 1906. Riffkorallen. In : *Expedition* SM"Pola" *in das Rote Meer. Zool. Ergebnisse XXVI Denkschriften Kaiserlichen Akad wiss. Wien.* **80** : 97 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Fig. 26. *Acropra massawensis* Marenzeller, 1906

Description : Colonies form extensive flat digitate clumps or thickets composed of branchlets of similar length and shape. Axial corallites are small. Radial corallites are irregular in length and are not clearly in rows down branch sides. They are tubular the longer corallites being very elongate giving colonies a spiny appearance.

Colour : It is white to pale brown.

Key Characters : Colony digitate; Colony forms plates; Axial corallites large; Radial corallites spiny; Axial corallites exsert; Radial corallites not in rows ..... *Acropora massawensis.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E 92° 33.066').

Distribution : American Samoa, Egypt and Madagascar.

IUCN Red List Category and Criteria : Data Deficient.

27 ***Acropora tutuilensis*** Hoffmeister, 1925, Fig. 27

Taxonomic references

Hoffmeister, J.E. 1925. Some corals form American Samoa and the Fiji Islands. *Papers Mar. Biol. Carnegie Inst. Washington*, **22** : 90pp.

Cairns, S.D. 1991. Catalog of the type specimens of stony corals (Milleporidae, Stylasteridae, Scleractinia) in the National Museum of Natural History, Smithsonian Institution. *Smithsonian Contributions to Zoology*, **(514)** : 5900.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

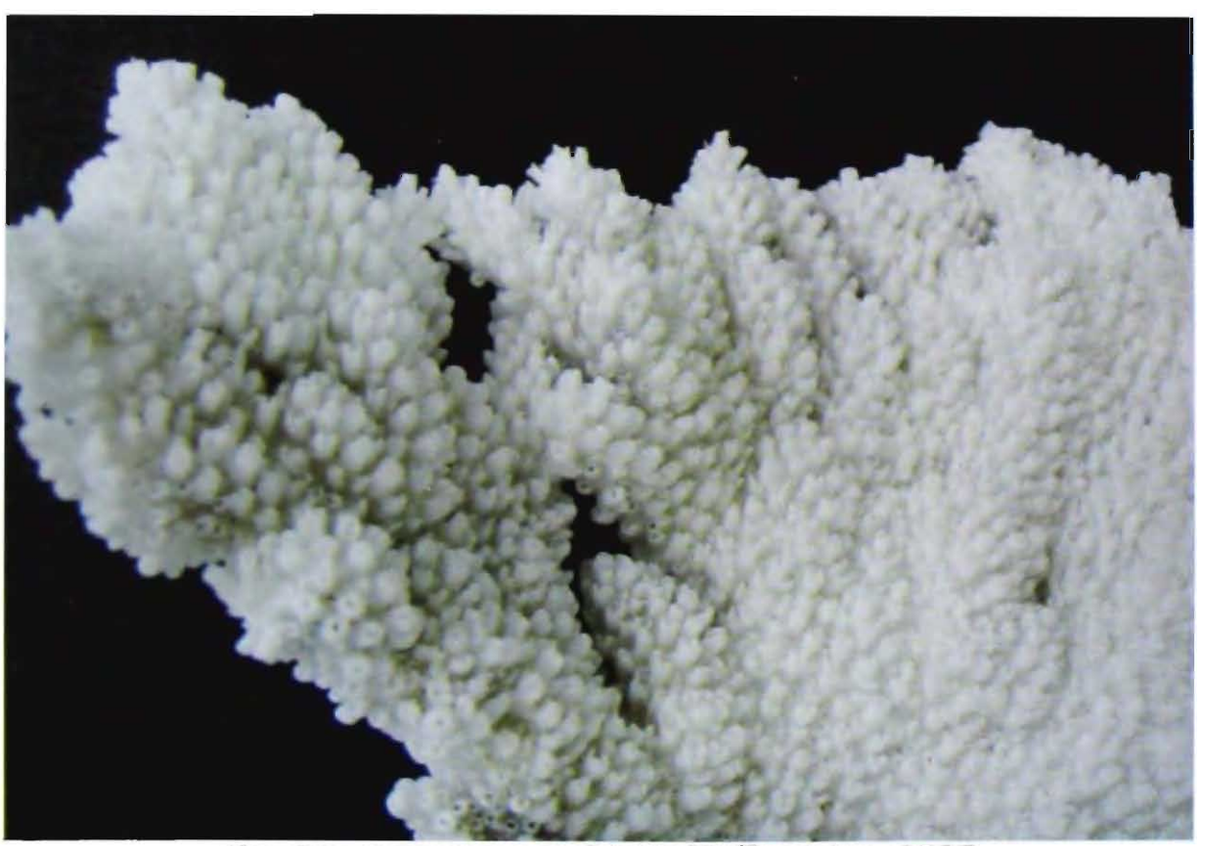


Fig. 27. *Acropora tutuilensis* Hoffmeister, 1925

Description : Colonies are plate like, with robust horizontal flat radiating branches, branches may be highly fused towards the colony centre or may form tiers of dissected plates. Axial corallites are distinctive and commonly form rows along colony margins. Radial corallites are commonly of two sizes, the larger being tubular, the smaller being pocket shaped and at the base of larger corallites.

Colour : Grey-brown with white margins.

Key character : Colony plate like; Branches robust; Branches and sub-branches not distinct; Branches fused proximally; Branches laterally flattened ..... *Acropora utuilensis.*

Place of Record : Rutland Island, South Andaman (Lat. N-11°24.314' & Long. E-92°39.780').

Distribution : American Samoa, Australia, Bahrain, Fiji, Indonesia, Iran, Islamic Republic of Iraq, Kiribati, Kuwait, Malaysia, Marshall Islands, Micronesia, Federated States of Nauru, Oman, Palau, Papua New Guinea, Philippines, Qatar, Samoa, Saudi Arabia, Singapore, Solomon Islands, Thailand, Tuvalu, United Arab Emirates, Vanuatu, Wallis and Futuna.

IUCN Red List Category and Criteria : Data Deficient.

28. ***Acropora anthocercis*** (Brook, 1893), Fig. 28

Synonyms

Madrepora coronata Brook, 1892,

Madrepora anthocercis Brook, 1893

Taxonomic references

Brook, G. 1893. Catalogue of the Madreporarian corals of the British Museum (Natural History). 1. The genus *Madrepora.* – London.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia.Part 5 Family Acroporidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Wallace, C. 1999. Staghorn corals of the world. *CSIRO Publ.*, Melbourne, 422 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin,* (**459**) 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are thick corymbose to encrusting plates. Branchlets are short and thick and may be almost encrusting where colonies are exposed to strong wave action. There are usually several axial or incipient axial corallites per branchlet. Radial corallites are appressed, with thick flaring walls and are arranged in a rosette.

Fig. 28. *Acropora anthocercis* (Brook, 1893)

Colour Colonies are mixture of colours, blue, mauve, purple and grey being the most common.

Key Characters : Colony forms plates; Branchlets with multiple axial coarallites; Axial corallites are larger that radial corallites..... .. .. *Acropora anthocercis.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066').

Distribution : Australia, Cook Islands, Djibouti, Fiji , Indonesia , Japan, Kiribati, Madagascar, Mozambique, Papua New Guinea, Philippines, Saudi Arabia, Solomon Islands, South Africa, Taiwan, Province of China, Thailand, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

29. *Acropora plana* Nemenzo, 1967 Fig. 29

Taxonomic references

Nemenzo, F. 1967. Systematic studies on Philippine shallow-water scleractinians. VI Suborder Astrocoeniina (*Montipora* and *Acropora*). *Nat. Appl. Sci. Bull. Univ. Philippines*, **20** : 1-141.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are thick tables formed of irregular fused horizontal branches and irregular upright branchlets. Axial and incipient axial corallites are very prominent and tubular in shape. They sometimes have no corallites, or radial corallites on one side only. Radial corallites are appressed.

Colour : Cream or pale brown.

Key Character : Colony plate like; Branches fine; Corallites and branchlets distinct; Axial corallites distinct; Branches irregular ....*Acropora plana.*

Place of Record : Rutland Island, South Andaman (Lat. N-11°24.314' & Long. E-92°39.780').

Distribution : Australia, Cambodia, China, Fiji, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, Solomon Islands, Taiwan Province of China, Thailand, and Viet Nam.

IUCN Red List Category and Criteria : Data Deficient.

Fig. 29. *Acropora plana* Nemenzo, 1967

30. ***Acropora insignis*** Nemenzo, 1967, Fig. 30

Taxonomic references

Nemenzo, F. 1967. Systematic studies on Philippine shallow-water scleractinians. VI Suborder Astrocoeniina (Montipora and Acropora). *Nat. Appl. Sci. Bull. Univ. Philippines*, **20** : 1-141.

Veron, J.E.N. 1992. Hermatypic corals of Japan. *Australian Inst. mar. Sci. monogr. Ser.*, **IX** : 86pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description
Colonies form compact irregular corymbose clumps with distal branches much finer than proximal branches. Axial corallites are long and tubular Radial corallites are widely spaced, immersed on main branches, scale like on distal branches.

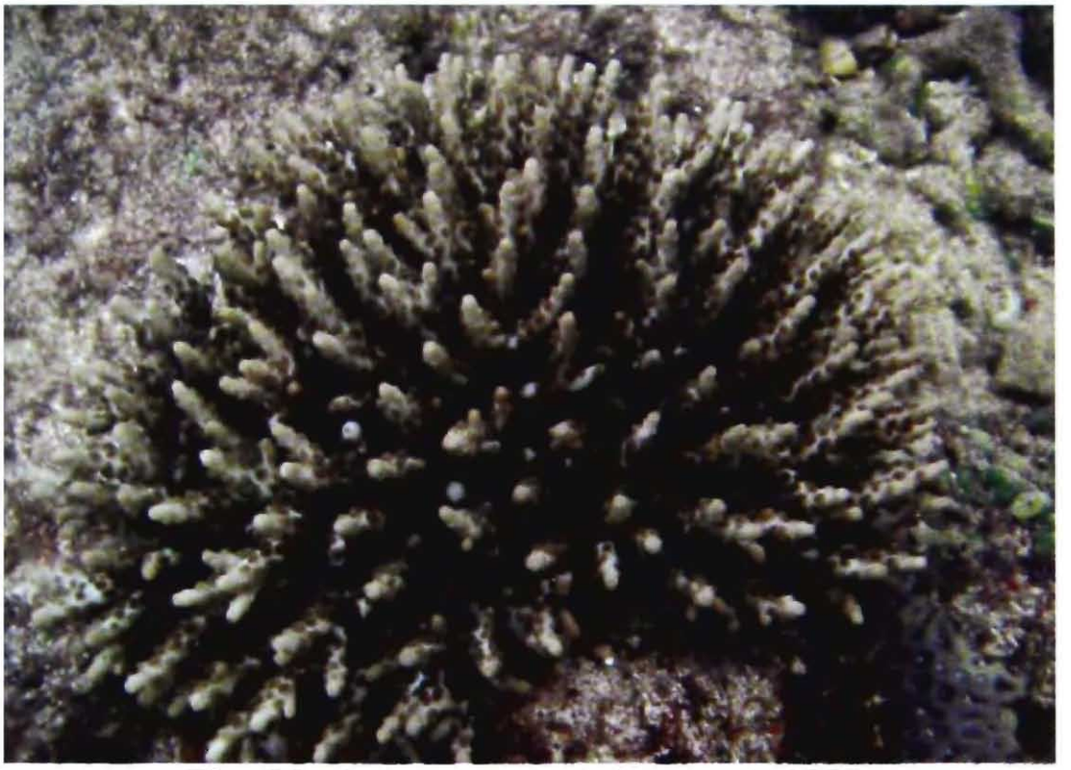


Fig. 30. *Acropora insignis* Nemenzo, 1967

Colour : White branches with contrasting coloured radial corallites.

Key Characters Colony forms clumps, branchlets well developed; Radial corallites with flaring lips; Radial corallites not in a rosette; Radial corallites widely spaced ..... *Acropora insignis.*

Place of Record : Car Nicobar Island, Nicobar (Lat. N-9°13.978' & Long. E-092°48.002')

Distribution : Australia, Fiji, Indonesia, Japan, Madagascar, Papua New Guinea, Philippines, Solomon Islands, Vanuatu and Viet Nam.

Red List Category & Criteria : Data Deficient.

Genus ***Astreopora*** de Blainville, 1830

Taxonomic references

Lamberts, E. 1982. The reef coral Astreopora (Anthozoa, Scleractinia, Astrocoeniidae): a revision of the taxonomy and description of a new species. *Pacific Sci.*, **36**(1) : 83-105.

Veron, J.E.N. and Wallace, C. 1984. Scleractinian of Eastern Australia. Part 5 Family Acroporidae. *Australian Ins. Mar. Sci. Monogr. Ser.*, **VI** : 485 pp.

Description : Colonies are massive, laminar or encrusting. Corallites are immersed or conical with short, numerous, neatly spaced septa. Columellae are conspicuous and compact. Corallite walls are slightly porous. Tentacles are extended only at night.

Key Characters : No axial corallites; Corallites abvious; columlla present ..... Genus *Astreopora.*

31. ***Astreopora incrustans*** Bernard, 1896, Fig. 31

Taxonomic references

Bernard, H.M. 1896. Catalogue of the Madreporarian corals of the British Museum (Natural History). II. The genus *Turbinaria.* The genus *Astraeopora.* – London.

Yabe, H., Sugiyama, T. and Eguchi, M. 1936. Recent reef building corals from Japan and the South Sea Islands under the Japanese mandate. *Sci. Rept. Tohoku Univ. Second Ser.*, (Geology) **1** : 166 pp.

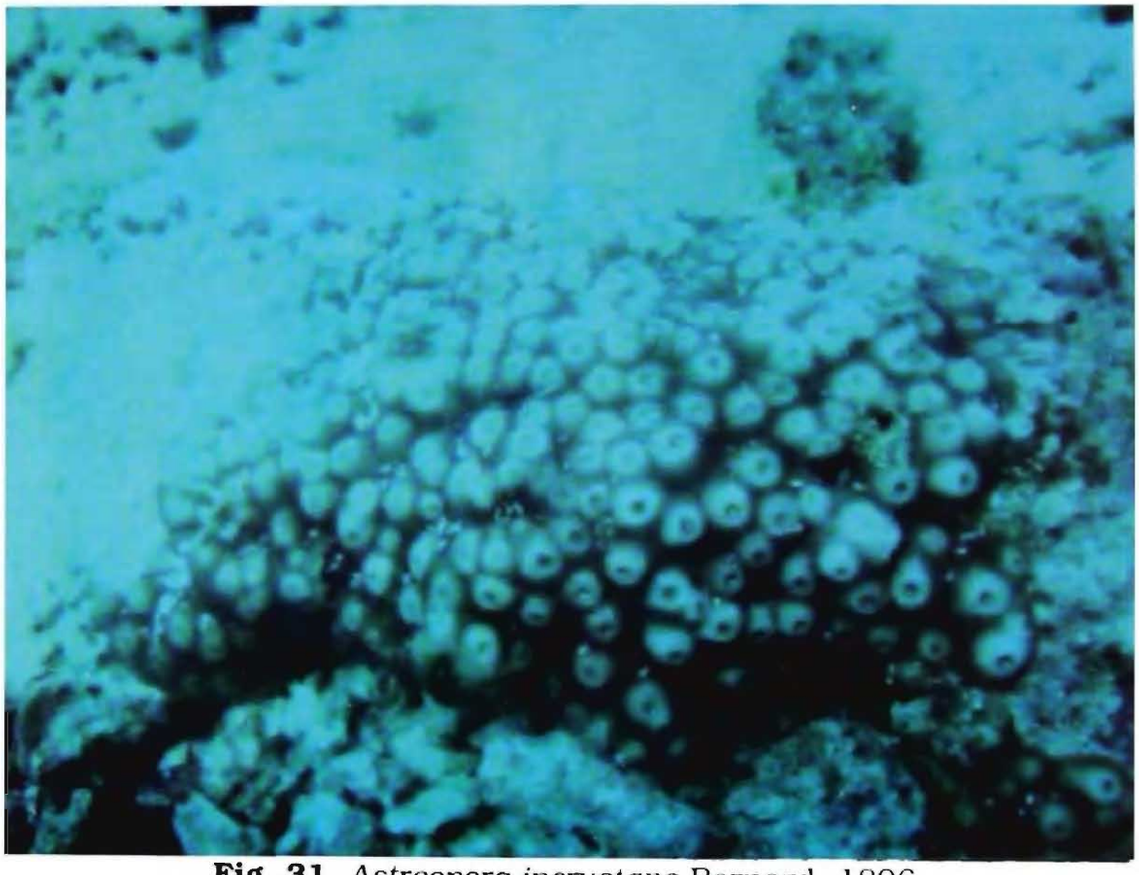


Fig. 31. *Astreopora incrustans* Bernard, 1896

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are usually flat, encrusting. Corallites are large and are irregular in shapes, some corallites are tubular. Corallites have large openings, with rough coenosteum.

Colour : Colonies are Dark brown and grey, with bright corallites surface.

Key Characters : Colony encrusting; Coenosteum coarse ....*Astreopora incrustans.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066').

Distribution : Australia, Indonesia, Japan, Papua New Guinea, Philippines, Solomon Islands, Tuvalu.

IUCN Red List Category and Criteria : Vulnerable.

32. ***Astreopora ocellata*** Bernard, 1896, Fig. 32

Synonym

Astreopora hirsuta Bernard, 1896

Taxonomic references

Lamberts, E. 1982. The reef coral Astreopora (Anthozoa, Scleractinia, Astrocoeniidae): a revision of the taxonomy and description of a new species. *Pacific Sci.*, **36**(1) : 83-105.

Bernard, H.M. 1896. Catalogue of the Madreporarian corals of the British Museum (Natural History). II. The genus *Turbinaria*. The genus *Astraeopora*. – London.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll. Research Bulletin*, (**459**) : 46 pp.

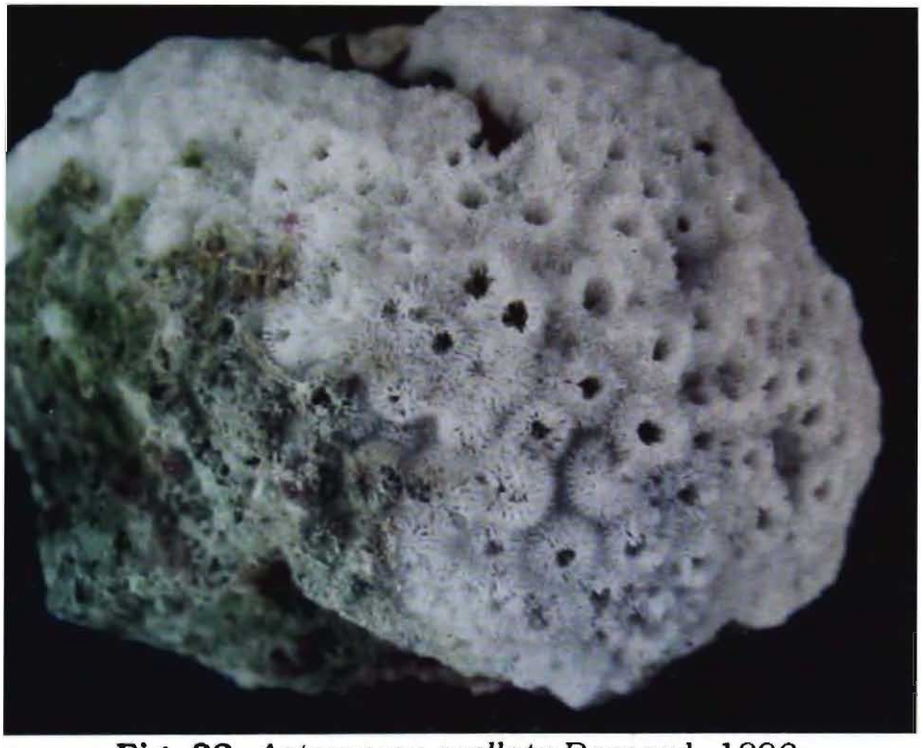


Fig. 32. *Astreopora ocellata* Bernard, 1896

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are dome-shaped or flat. Corallites are compact and large, with wide openings. Small corallites usually occur between the large corallites. The coenosteum is coarse.

Colour : Cream or yellow.

Key Characters : Colony massive; Corallites large (>1.5 mm diameter); Corallites not conical, with dominating openings; Corallites not widely spaced ..... *Astreopora ocellata.*

Place of Record : Arial Bay, North Andaman (Lat. N-13°16.093' & Long. E-93°02.433').

Distribution : Australia, British Indian Ocean Territory, China, Indonesia, Japan, Kiribati, Madagascar, Malaysia, Maldives, Marshall Islands, Micronesia (Federated States of), New Caledonia, Northern Mariana Islands, Palau, Papua New Guinea, Philippines, Réunion, Solomon Islands, Tuvalu and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

Family POCILLOPORIDAE Gray, 1842

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1976. Sclearctinia of Eastern Australia. Part 1. Families Thamnasteriidae, Astrocoeniidae, Pocilloporidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **I** : 86 pp.

Description : Colonial and mostly zooxanthalate. Colonies are submassive, or branching. Corallites are immersed to conical, small, have well developed columellae and neatly arranged septa in one or two cycles. Usually some septa are fused with the collumella. The coenosteum is covered with spinules.

Genus ***Pocillopora*** Lamarck, 1816

Taxonomic references

Veron, J.E.N. and Pichon, M. 1976. Sclearctinia of Eastern Australia. Part 1. Families Thamnasteriidae, Astrocoeniidae, Pocilloporidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **I** : 86pp.

Dai, C.F. 1989. Scleractinia of Taiwan. I Families Astrocoeniidae and Pocilloporidae. *Acta Oceanog Taiwanica*, **22** : 83-101.

Description : Colonies are submassive to branching with branches either tending to the flattened or else fine and irregular. Colonies are covered with varrucae. Corallites are immersed. They may be devoid of internal structures or have a low solid columella and two unequal cycles of septa. The

coenosteum is usually covered by granules. Tentacles are usually extended only at night.

Key Characters : Colonies have varrucae .....Genus *Pocillopora.*

33. ***Pocillopora danae*** Verrill, 1864, Fig. 33

Taxonomic references

Verrill, A.E. 1864. List of the polyps and corals sent by the Museum of Comparative Zoology to other institutions in exchange, with annotations. *Bulletin of the Museum of Comparative Zoology*, **1**(3) : 29-60.

Vaughan, T.W. 1918. Some shoal-water corals from Murray Islands, Cocos-Keeliing Islands and fanning Islands. *Papers Dep. Mar. Biol. Carnegic Inst. Washington*, **9** : 51-234.

Cairns, S.D. 1991 Catalog of the type specimens of stony corals (Milleporidae, Stylasteridae, Scleractinia) in the National Museum of Natural History, Smithsonian Institution. *Smithsonian Contributions to Zoology*, (**514**) : 5900.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

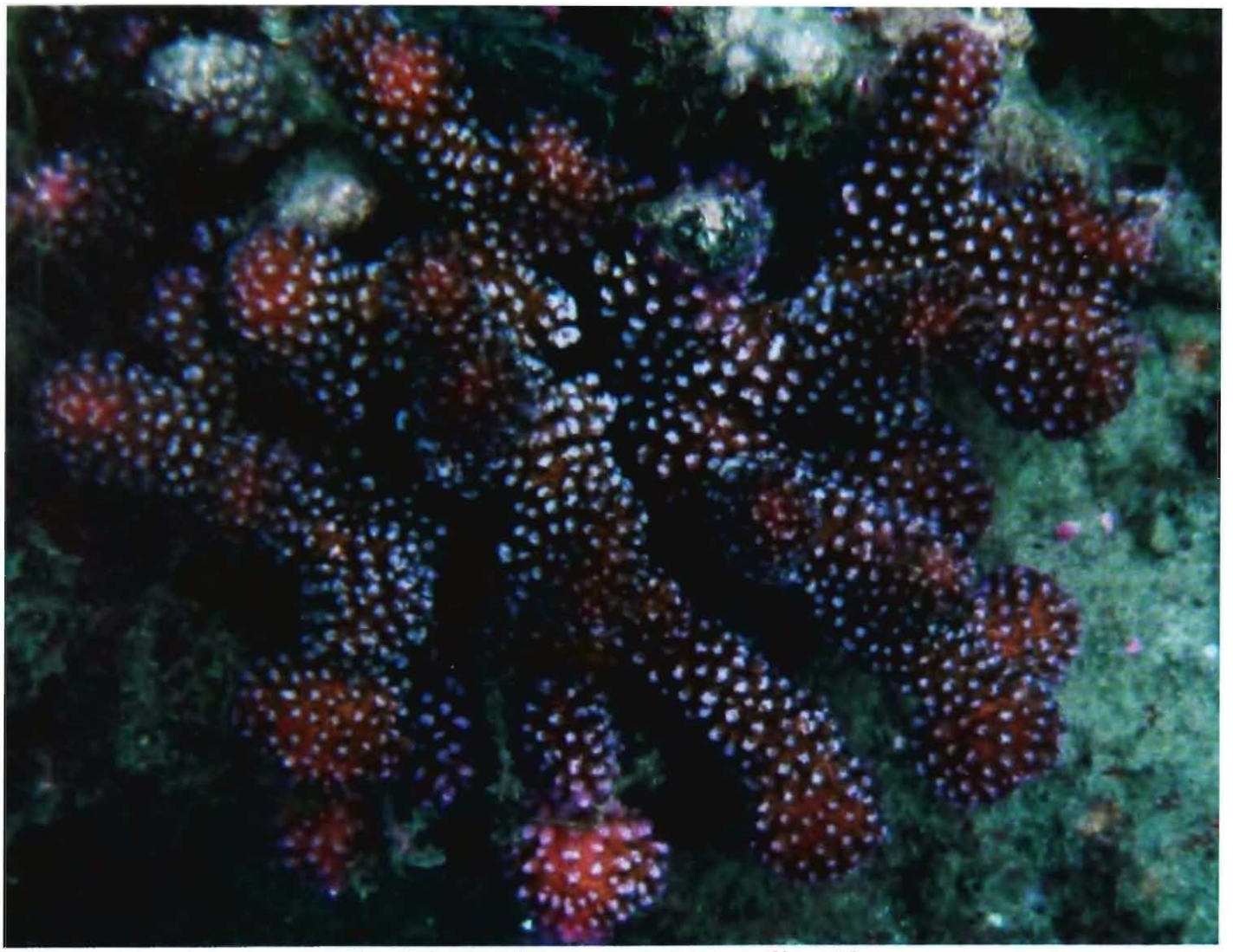


Fig. 33. *Pocillopora danae* Verrill, 1864

Description : Colonies may be one meter across and are composed of irregular, mostly prostrate branches that tend to form a three dimensional tangle. Verrucae are widely spaced and irregular in size, although they remain distinct from branches.

Colour : Cream and reddish brown.

Key Characters : Colony consists of prostrate branches; Branches not large and elongate; Branches uniform over whole colony ..... *Pocillopora danae.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : American Samoa, Australia, Chile, Colombia, Fiji, Indonesia, Malaysia, Papua New Guinea, Samoa, Solomon Islands, Tuvalu and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

34. ***Pocillopora kelleheri*** Veron, 2000, Fig. 34

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **2** : 32.

Description : Colonies form wide plates with prostrate branches that are usually evenly spaced. Colonies are usually attached on one side and do not form clumps. Verrucae are uniform in size and are not crowded. Colour light brown, rarely purple or green.

Colour : Light brown, rarely purple or green.

Key Characters : Colony consists of prostrate branches; Branches large and elongate; Branches laterally compressed; Branches evenly spaced .....*Pocillopora kelleheri.*

Place of Record : Rutland Island, South Andaman (Lat. N-11°24.314' & Long. E-92°39.780').

Fig. 34. *Pocillopora kelleheri* Veron, 2000

Distribution : Australia, Indonesia, Japan, Malaysia, Papua New Guinea, Philippines, Solomon Islands, Taiwan, Province of China, Thailand and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

35. ***Pocillopora ligulata*** Dana, 1846, Fig. 35

Synonym

Pocillopora aspera Verrill, 1869

Taxonomic references

Dana, J.D. 1846. Zoophytes. United States Exploring Expedition during the years 1831-1842 under the command of Charles Wilkes, **8** : 1-740. Lea and Blanchard. – Philadelphia.

Vaughan, T.W. 1907 Recent Madreporaria of the Hawaiian Islands and Laysan. *US National Mus. Bull.*, **59** : 427 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are upto 0.5 meters across, compact with irregularly radiating branches which have flattened ends and truncated tips. Varrucae are widely spaced and irregular.

Fig. 35. *Pocillopora ligulata* Dana, 1846

Colour : Colonies grey to brown.

Key Characters : Varrucae do not intergrade with branches; Colony consists of upright branches; Colony with short compact branches; Varrucae distributed irregularly on branches ..... *Pocillopora ligulata.*

Place of Record : Neil Island, Ritchie's Archipelago (Lat. N-11°50.826' & Long. E-093°00.554').

Distribution : American Samoa, Chile, Colombia, Cook Islands, Ecuador, Fiji, French Polynesia, Kiribati, Niue, Northern Mariana Islands, Palau, Panama, Samoa, Tokelau, Tonga, Tuvalu, United States Minor Outlying Islands and Wallis and Futuna.

IUCN Red List Category and Criteria : Least Concern.

Genus ***Seriatopora*** Lamarck, 1816

Taxonomic references

Veron, J.E.N. and Pichon, M. 1976. Sclearctinia of Eastern Australia. Part 1. Families Thamnasteriidae, Astrocoeniidae, Pocilloporidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **I** : 86 pp.

Dai, C.F. 1989. Scleractinia of Taiwan. I Families Astrocoeniidae and Pocilloporidae. *Acta Oceanog Taiwanica*, **22** : 83-101.

Description : Colonies are compact bushes with thin anastomosing branches. Corallites are arranged in a neat rows along the branches. They are mostly immersed and have poorly developed internal structures except for the solid style like columellae. Usually one, but some times two cycles of septa are developed and are fused to the columella. The coenosteum is covered by fine spinules.

Key Characters : Colonies do not have varrucae; Branches fine .... Genus *Seriatopora.*

36. ***Seriatopora aculeata*** Quelch, 1886, Fig. 36

Taxonomic references

Quelch, J.J. 1886. Report on the reef corals collected by HMS Challenger during the year 1873-1876. *Rept. Sci. Results Voyage of HMS Challenger. Zoology*, **3** : 203 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Branches are thick (5-9 mm), short and strongly tapered. They are usually in fused clumps. Corallites are irregularly distributed on branches. Tentacles are commonly extended during daytime also.

Colour : Pink or cream.

Key Characters : Branches >5 mm diameter· Corallites not aligned in rows.....*Seriatopora aculeata.*

Place of Record : Neil Island, Ritchie's Archipelago (Lat. N-11°50.165' & Long. E-93°01.846') and Tarmugli Island, South Andaman (Lat. N-11°33.261 & Long. E-092°32.591').

Distribution : Australia, Fiji, Indonesia, Japan, Madagascar Papua New Guinea and Solomon Islands.

IUCN Red List Category and Criteria : Vulnerable.

Fig. 36. *Seriatopora aculeata* Quelch, 1886

Family AGARICIIDAE Grey, 1847

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonial and zooxanthalate. Colonies are massive and laminar. Corallites are immersed with poorly defind walls formed by thickening of the septo-costae. Septa seldom fuse and are continuos between adjacent corallite centres. They have smooth or finely serrated margins and are loosely packed.

Genus ***Agaricia*** Lamarck, 1801

Taxonomic reference

Wells, J.W. 1973b. New and old scleractinian corals from Jamaica. *Bull. Mar. Sci.*, **23** : 16-58.

Description : Colonies are composed of plates which are flat, horizontal and upright. The latter are usually contorted and fused. Corallites are

aligned in rows which are separated by most parallel ridges (collines) roughly parallel to plate margins. Septo-costae alternate. They are perpendicular to plate ridges or converge on corallite centre, which are weakly developed columellae.

Key Characters : Colony not massive; Corallite centre discernible; Polyps aligned between collines; Corallites without individual walls .... Genus *Agaricia*.

37 ***Agaricia fragilis*** Dana, 1846, Fig. 37

Synonym

Mycedia fragilis Dana, 1846

Taxonomic references

Dana, J.D. 1846. Zoophytes. *United States Exploring Expedition during the years 1831-1842 under the command of Charles Wilkes*, **8** : 1-740. Lea and Blanchard. – Philadelphia.

Laborel, J. 1969. Madreporaires et hydrocoralliaries recifaux des cotes Bresiliennes sustematique, ecologie, repartition vertical et geographique. *Annales de l'Institut Oceanog.*, **47** : 171-229.

Wells, J.W. 1973b. New and old scleractinian corals from Jamaica. *Bull. Mar. Sci.*, **23** : 16-58.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. *Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies form flat unifacial explanate plates with corallites in long, roughly concentric valleys. Valleys are closely (2-4 mm) spaced corallites are small, close together and face upwards. Columellae are weakly developed.

Colour : Greyish brown.

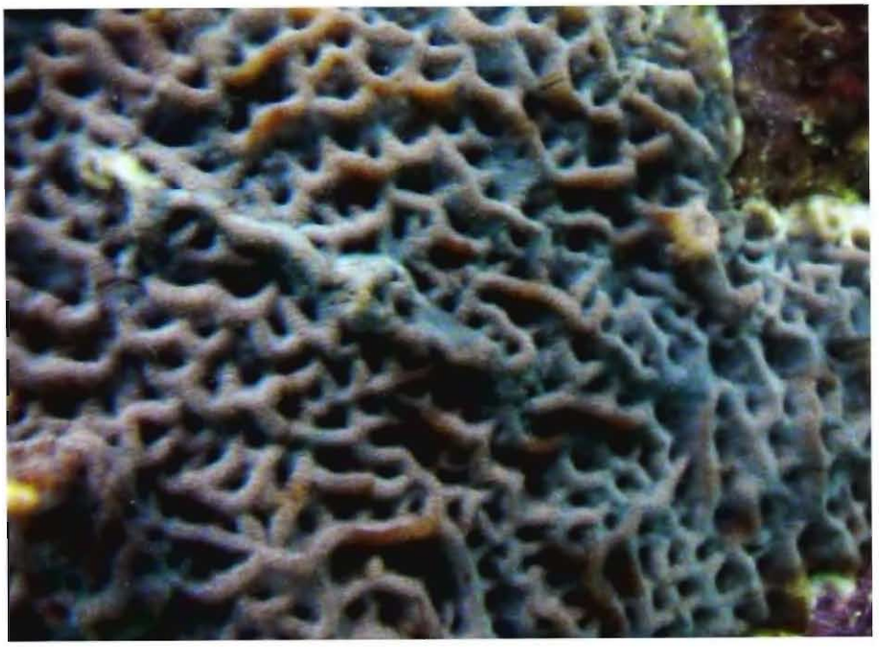


Fig. 37. *Agaricia fragilis* Dana, 1846

Key Characters : Colony consists of horizontal plates; Valleys short, irregular; Colonies widely (>5 mm.) spaced; >5 corallite centre per cm .... *Agaricia fragilis.*

Place of Record : Neil Island, Ritchie's Archipelago (Lat. N-11°50.165' & Long. E-93°01.846') and Tarmugli Island, South Andaman (Lat. N-11°33.261' & Long. E-092°32.591').

Distribution : Bahamas, Barbados, Belize, Bermuda, Brazil, British Virgin Islands, Cayman Islands, Colombia, Cuba, Dominica, Dominican Republic, Guadeloupe, Honduras, Jamaica, Martinique, Mexico, Netherlands Antilles, Turks and Caicos Islands, United States of America and United States Virgin Islands.

IUCN Red List Category and Criteria : Data Deficient.

Genus ***Pavona*** Lamarck, 1801

Taxonomic references

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Dai, C.F. and Lin, C.H. 1992. Scleractinia of Taiwan. III Family Agariciidae. *Acta Oceanog. Taiwanica*, **28** : 80-101.

Description : Colonies are massive, columnar, frond like or laminar, the last usually being bifacial. Corallites have poorly defined walls and are small shallow depressions, usually with a central columella, sometimes separated by ridges. Corallites are interconnected by exsert septo-costae. Except for *Pavona explanullata*, polyps are extended at night.

Key Characters : Colony not massive; Corallites centres discernible; Polyps not aligned between collines ..... Genus *Pavona.*

38. ***Pavona danai*** Milne Edwards & Haime, 1860, Fig. 38

Synonym

Pavona dilatata Nemenzo & Montecillo, 1985

Taxonomic references

Milne Edwards, H. and Haime, J. 1860. *Histoire naturelle des coralliaires*, **3** : 560 pp. Roret., Paris.

Vaughan, T.W. 1918. Some shoal-water corals from Murray Islands, Cocos-Keeliing Islands and fanning Islands. *Papers Dep. Mar. Biol. Carnegic Inst. Washington*, **9** : 51-234.

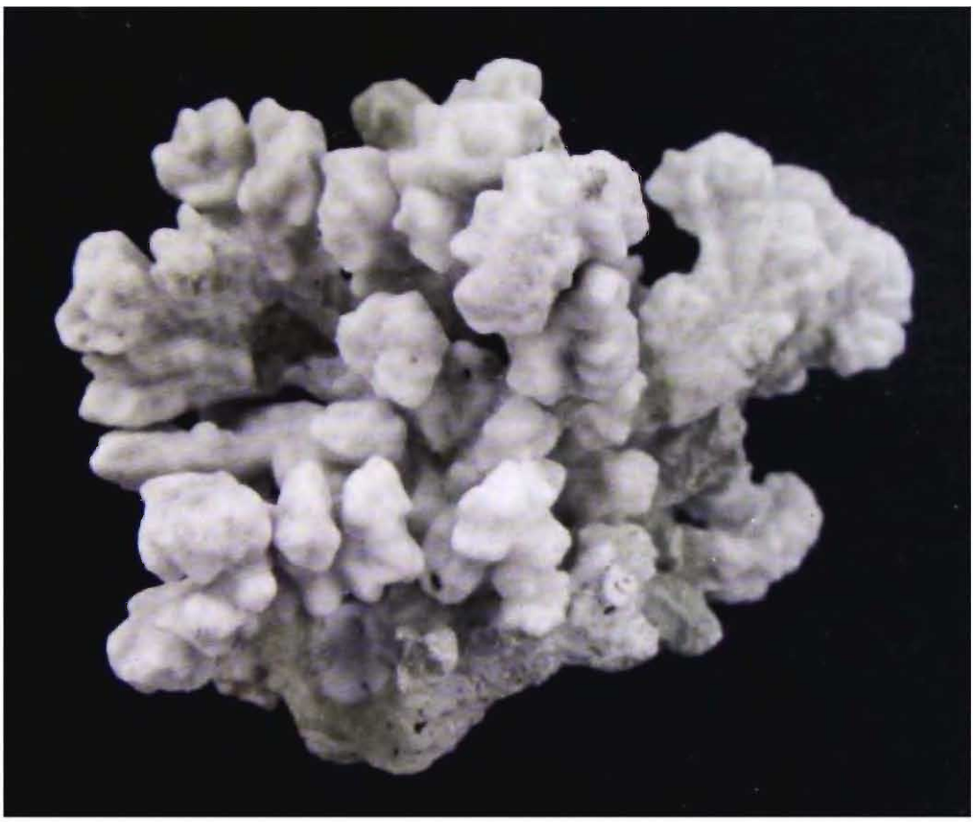


Fig. 38. *Pavona danai* Milne Edwards & Haime, 1860

Cairns, S.D. 1991. Catalog of the type specimens of stony corals (Milleporidae, Stylasteridae, Scleractinia) in the National Museum of Natural History, Smithsonian Institution. *Smithsonian Contributions to Zoology*, (**514**) : 59 00.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies have short, stunted, contorted, laminar branches or fronds, which are angular in cross section. Corallites are irregular or are aligned vertically.

Colour : Colonies pale or dark brown.

Key Characters : Colonies leafy or plate-like; Colonies upright plates; Plates short, thick; Corallites aligned vertically ..... *Pavona danai.*

Place of Record : Arial Bay, North Andaman (Lat. N-13°16.093' & Long. E-93°02.433').

Distribution : American Samoa, Australia, Cocos (Keeling) Islands, Egypt, Indonesia, Japan, Jordan, Madagascar, Marshall Islands, Mauritius, Micronesia (Federated States of), Mozambique, Myanmar, Philippines, Réunion, Saudi Arabia, Seychelles, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

Genus ***Leptoseris*** Milne Edwards and Haime, 1849

Taxonomic references

Dinesen, Z.D. 1980. A revision of the coral genus *Leptoseris* (Scleractinia : Fungina : Agariciidae). *Mem. Queensland Mus.*, **20**(1) : 182-235.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Dai, C.F. and Lin, C.H. 1992. Scleractinia of Taiwan. III Family Agariciidae. *Acta Oceanog. Taiwanica*, **28** : 80-101.

Description : Colonies are laminar or encrusting, the former being unifacial. They frequently have a distinctive central corallite. Corallites are small shallow depression with poorly defined walls. They have central columellae and are usually separated by ridges and interconnected by fine septo-costae. Tentacles are usually extended only at night.

Key Characters : Colony not massive; Corallite centre discernible; Polyps aligned between collines; Corallites with individual walls .... Genus *Leptoseris*.

39. ***Leptoseris cucullata*** (Ellis & Solander, 1786), Fig. 39

Synonyms

Leptoseris nobilis Ma, 1959,

Madrepora cucullata Ellis & Solander, 1786

Helioseris cucullata (Ellis & Solander, 1786)

Taxonomic references

Ellis, J. and Solander, D. 1786. The natural history of many curious and uncommon zoophytes. White and Son., London.

Wells, J.W. 1973b. *New and old scleractinian corals from Jamaica. Bull. Mar. Sci.*, **23** : 16-58.

Dinesen, Z.D. 1980. A revision of the coral genus *Leptoseris* (Scleractinia : Fungina : Agariciidae). *Mem. Queensland Mus.*, **20**(1) : 182-235.

Cairns, S.D. 1982. Stony corals (Cnidaria : Hydrozoa, Scleractinia) of Carrie Bow Cay, Belize. *Smithsonian Contrib. Mar. Sci.*, **12** : 271-302.

Zlatarski, V.N. and Estalella, N.M. 1982. Les Scleractiniaires de Cuba avec des donnees sur les organisms associes. *Editions Acad. Bulgare Sci. Sofia.*, : 472 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

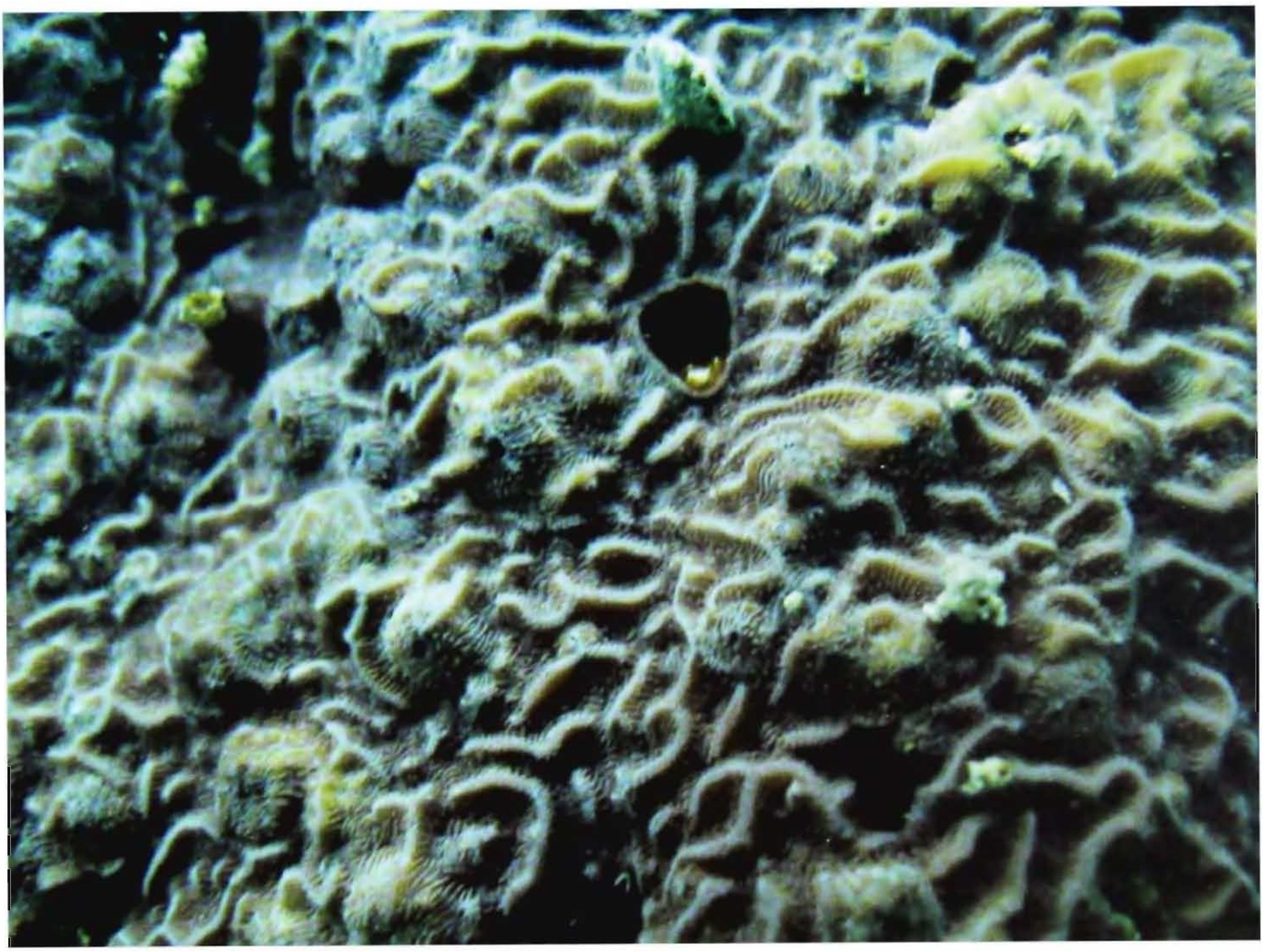


Fig. 39. *Leptoseris cucullata* (Ellis & Solander 1786)

Description : Colonies are flat plates which may be encrusting or tiered. Corallites are closely compacted, large, outwardly inclined, with a tendency to form concentric rows. Septo-costae strongly alternate.

Colour : Brown sometomes with pale margins and or pale corallites at centre.

Key Characters : Colonies not delicate fronds; Corallites aligned or in valleys; Corallites exsert; Septo-costae alternate; Corallites with sharp edges ..... *Leptoseris cucullata.*

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116)

Distribution : Caribbean Sea.

IUCN Red List Category and Criteria : No entries found.

40. ***Leptoseris solida*** (Quelch, 1886), Fig. 40

Synonyms

Leptoseris paschalensis Wells, 1972

Leptoseris porosa (Quelch, 188)

Domoseris solida Quelch, 1886

Domoseris porosa Quelch, 1886

Taxonomic references

Quelch, J.J. 1886. Report on the reef corals collected by H.M.S. Challenger during the years 1873-76. *Scientific Reports Res. Voyage H.M.S. Challenger, Zoology*, **16**(46) : 203 pp.

Wells, J.W. 1954. Recent corals of the Marshall Islands. *US Geol. Survey Professional Papers*, **260** : 384-486.

Dinesen, Z.D. 1980. A revision of the coral genus *Leptoseris* (Scleractinia : Fungina : Agariciidae). *Mem. Queensland Mus.*, **20**(1) : 182-235.

Cairns, S.D., Hoeksema, B.W. and van der Land, J 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Description : Colonies are encrusting and do not have a conspicuous central corallite. The surface may be folded and sometimes forms tubes. Corallites are inclined towards the colony margins and are distributed irregularly. Corallites have small openings. Septo-costae are granulated and alternate. Those of adjacent corallites commonly occur between corallites.

Colour : Brown with white margins.

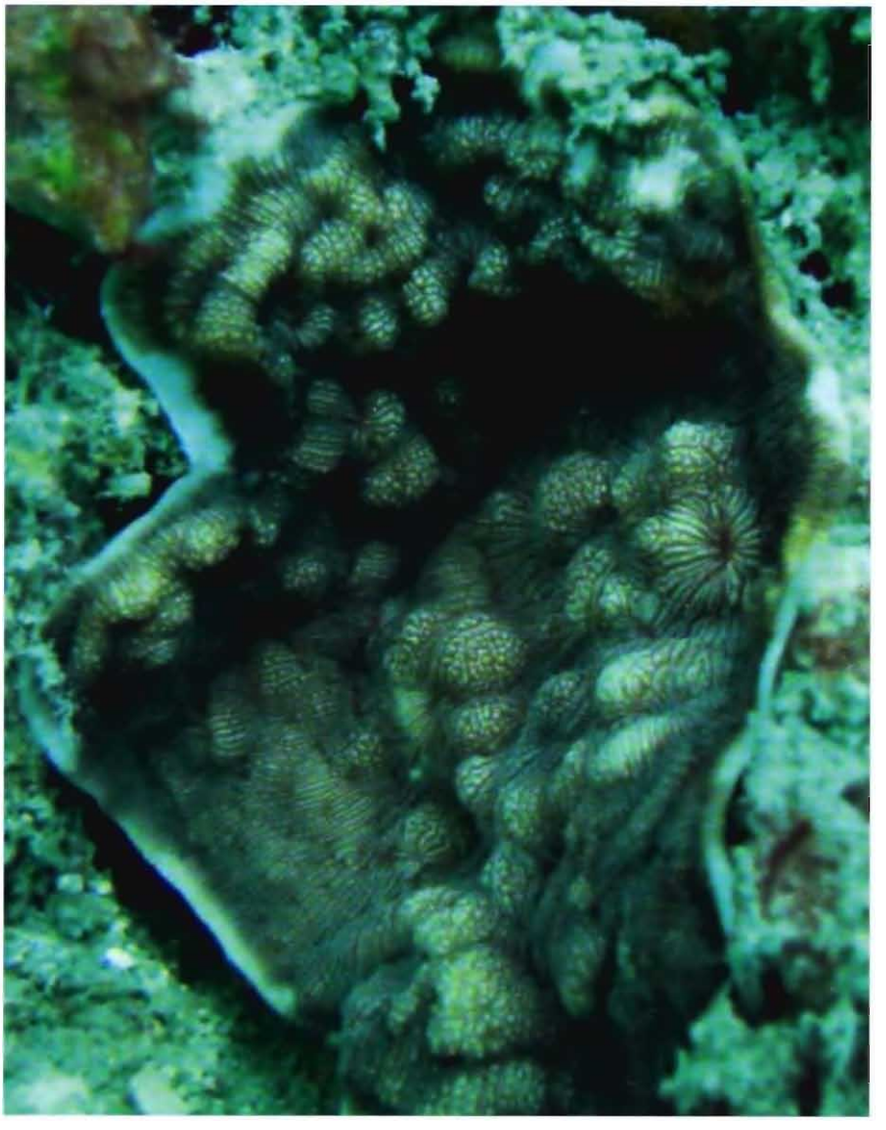


Fig. 40. *Leptoseris solida* (Quelch, 1886)

Key Characters : Colonies not delicate fronds; Corallites aligned or in valleys; Corallites exsert; Septo-costae sub-equal ..... *Leptoseris solida.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution : Australia, British Indian Ocean Territory, Chile, Fiji, French Polynesia, Indonesia, Japan, Kuwait, Madagascar, Malaysia, Marshall Islands, Mozambique, Papua New Guinea, Philippines, Pitcairn, Seychelles and Solomon Islands.

IUCN Red List Category and Criteria : Least Concern.

Genus ***Pachyseris*** Milne Edwards and Haime, 1849

Taxonomic references

Veron, J.E.N. and Pichon, M. 1980 Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Dai, C.F. and Lin, C.H. 1992. Scleractinia of Taiwan. III Family Agariciidae. *Acta Oceanog. Taiwanica*, **28** : 80-101.

Description : Colonies are primarily laminar and unifacial, to branching and bifacial. Branches are usually, but not necessarily, highly contorted. The surface is a series of concentric ridges parallel to the margins. Corallite centres are not discernible. Valleys are concentric and parallel to the colony edge. Columellae are wall like with lobed upper margins, or absent. Septo-costae are fine, even and tightly compacted. Extended tentacles have never been recorded, day or night.

Key Characters : Colony not massive; Corallite centre not discernible .... Genus *Pachyseris.*

41. ***Pachyseris foliosa*** Veron, 1990, Fig. 41

Taxonomic references

Veron, J.E.N. 1990a. New Scleractinian from Japan and other Indo-West Pacific Countries. *Galaxea*, **9** : 95-173.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies consist of whorls of delicate, unifacial, undivided or bifurcating fronds. Valleys are shallow and parallel to frond margins. There is almost no development of columellae.

Colour : Pale brown or purple.

Key Characters : Colony bifurcated fronds; Valleys shallow and even..... ..... *Pachyseris foliosa.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808'), Neil Island, Ritchie's Archipelago (Lat. N-11°50.826' & Long. E-093°00.554'), Jolly Buoy Island, South Andaman (Lat. N-11° 30. 251' & Long. E-92° 32.591'), Trinket Island, Nicobar (Lat. N-08° 02. 806' & Long. E-93° 34.556') and Kamorta Island, Nicobar (Lat. N-08° 07 170' & Long. E-93° 31.606').

Distribution : Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria Least Concern.

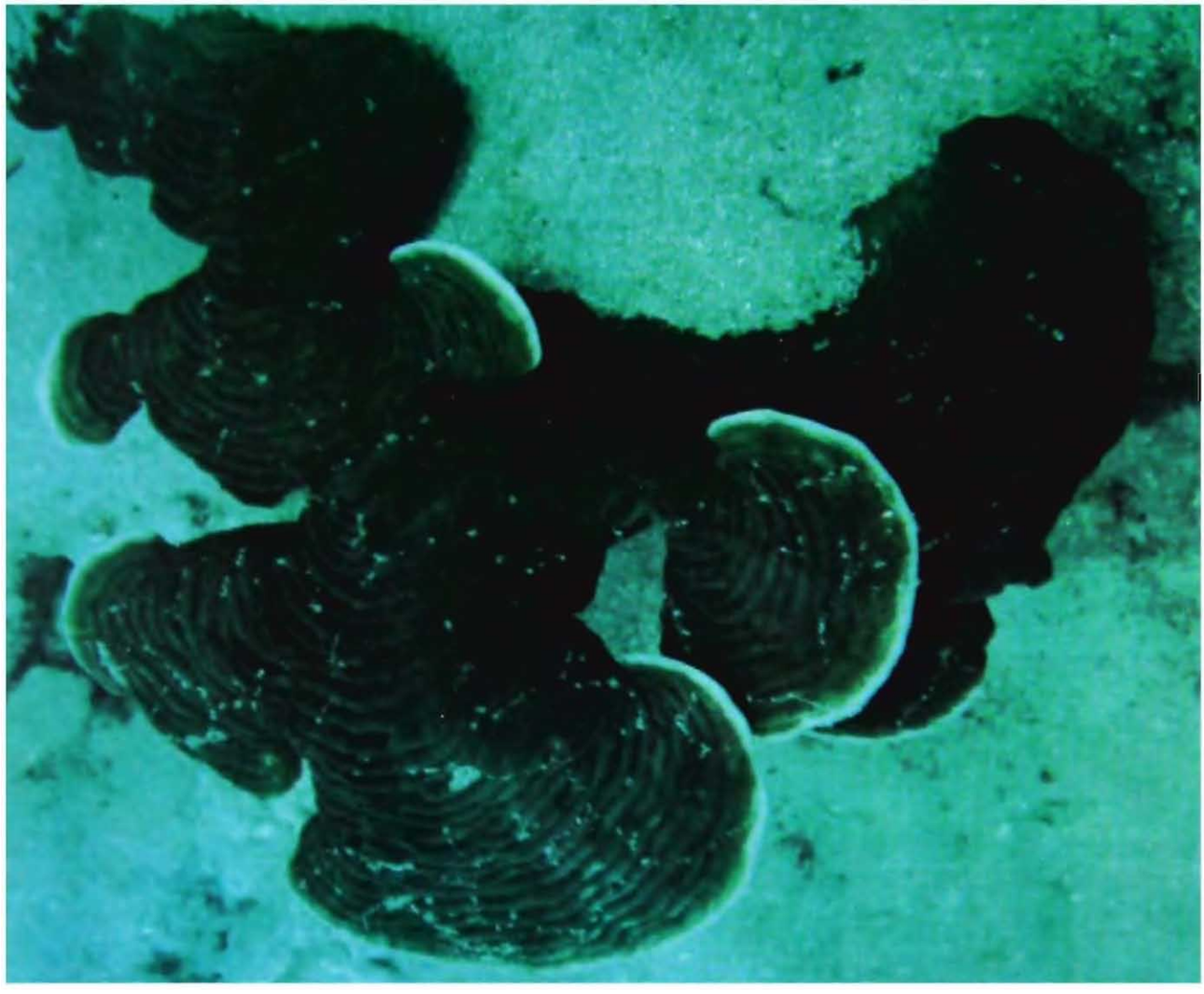


Fig. 41. *Pachyseris foliosa* Veron, 1990

Family FUNGIIDAE Dana, 1846

Taxonomic references

Wells, J.W. 1966. Evolutionary development of the scleractinian family Fungiidae. In : Rees W.J. (ed.) The Cnidaria and their evolution. *Symp. Zool. Soc. London*, **16** : 223-246.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471pp.

Description : Solitary or colonial, free living or attached, mostly zooxanthalate. Colonial genera may be derived from solitary genera as each colonial genus has septo-costal structures corresponding to those of a solitary genus. These septo-costae radiate from the mouth on the upper surface (as septa) and from the centre of the undersurface (as costae).

Genus ***Cantharellus*** Höksema and Best, 1984

Taxonomic references

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471pp.

Description : Polyps have one, or sometimes several, centres. They are permanently attached to the substrate. Septa and costae have simple ornamentations, usually only fine granules.

Key Characters : Not colonial; Attached to the substrate .... Genus *Cantharellus*.

42. ***Cantharellus noumeae*** Höksema and Best, 1984, Fig. 42

Synonym

Cycloseris noumeae (Hoeksema & Best, 1984)

Taxonomic reference

Hoeksema, B.W. and Best, M.B. 1984. *Cantharellus noumeae* (gen. nov., spec. nov.), a new scleractinian coral (Fungiidae) from New Caledonia. *Zoologische Mededelingen*, **58** : 323-328.

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000 Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description

Polyps are small, cup-shaped when fully developed, and have wavy margins. The species may be solitary or colonial, the latter consisting of a few contorted corallites. Primary septa are thin and usually smooth edged.

Fig. 42. *Cantharellus noumeae* Höksema and Best, 1984

Colour : Brown

Key Characters : Septa thin ..... *Cantharellus noumeae.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Australia, Indonesia, New Caledonia, Papua New Guinea, Philippines and Saudi Arabia.

IUCN Red List Category and Criteria : Endangered.

Genus ***Fungia*** Lamarck, 1801

Taxonomic references

Wells, J.W. 1966a. Evolutionary development of the scleractinian family Fungiidae. In : Rees W.J. (ed.) The Cnidaria and their evolution. *Symp. Zool. Soc. London*, **16** : 223-246.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471 pp.

Description : Corals are usually solitary, generally free-living except for juveniles, flat or dome shaped, and circular or elongate in outline, with a central mouth. Septa have large or small, rounded to pointed teeth. Costae consists mostly of rows of spines the skeleton often has pits between the

costae on the lower surface. Tentacles may be extended during the day and are short and widely spaced.

Key Characters : Not colonial; Free living; Central mouth dominant; Disc not small, costae conspicuous; Septal teeth not large lobes .... Genus *Fungia.*

43. ***Fungia fralinae*** Nemenzo,1955, Fig. 43

Synonym

Cycloseris similis Nemenzo, 1976

Taxonomic references

Nemenzo, F. 1955. Systematic studies onPhilippine shallow water scleractinians. I. Suborder Fungiida. *Nat. Appl. Sci. Bull.*, **15** : 3-84.

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. *Corals of the world.* 3 vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Polyps are circular. Septa are in two distinct orders, those of the first order being very exsert, straight and thin. All septa have fine teeth. Tentacles, which are sometimes bifurcated, are commonly extended during the day.

Colour : Polyps are usually olive-green with tiny but conspicuous violet tentacle tips.

Key Characters : Disc approximately circular; Septal teeth fine, rounded; Septa cycle uneven; Septa in two distinct orders .... *Fungia fralinae.*

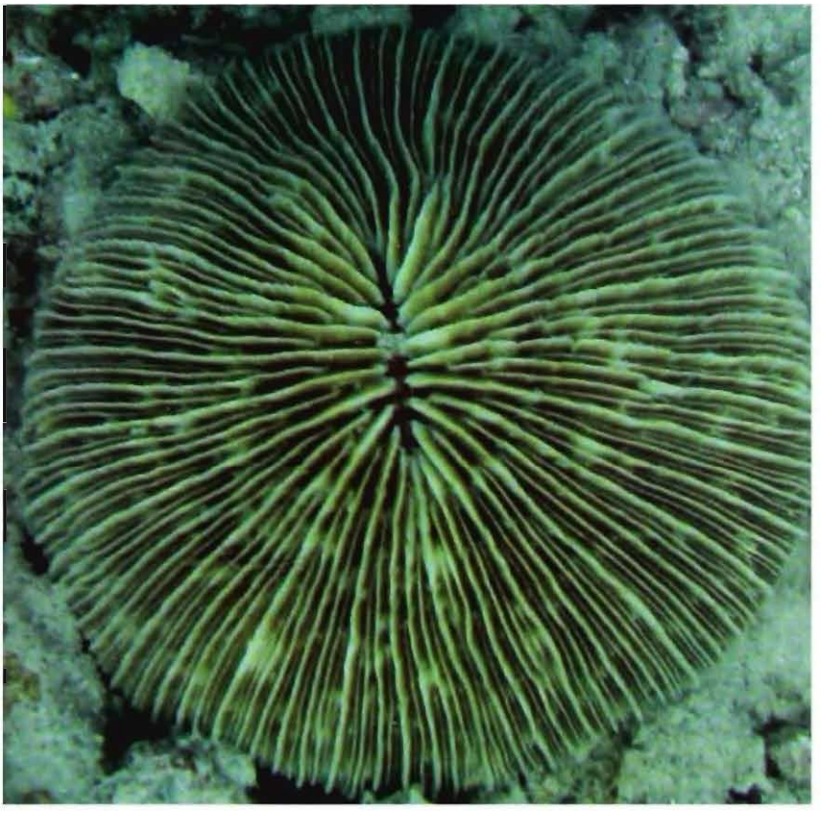


Fig. 43. *Fungia fralinae* Nemenzo, 1955

Place of Record : North Bay, Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116)

Distribution : Australia, Indonesia, Kiribati, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

44. ***Fungia scabra*** (Doderlein, 1901), Fig. 44

Taxonomic references

Döderlein, L. 1901. Die Korallen-Gattung *Fungia*. *Zoologische Anzeiger*, **24** : 353-360.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. 3 vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Polyps are usually circular flat or arched. Septa are thin with fine conical or granular teeth. Small tentacular lobes may be present.

Fig. 44. *Fungia scabra* (Doderlein, 1901)

Costae are fine. There are no pits between the costae. Septa may form irregular patterns in turbid environments.

Colour : Polyps are usually brown.

Key Characters : Disc approximately circular; Septal teeth fine, rounded; Septa not thick and wavy; Septal cycle even; Surface with axial mouth only; Septal teeth fine serrations ..... *Fungia scabra.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808') and Grub Island (Lat.N-11° 35. 391 & Long. E-92° 35.637').

Distribution : Australia, China, Fiji, French Polynesia, Hong Kong, Indonesia, Japan, Madagascar, Malaysia, Papua New Guinea, Philippines, Seychelles, Singapore, Solomon Islands, United Republic of Tanzania and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

45. ***Fungia spinifer*** (Claereboudt and Hoeksema, 1987), Fig. 45

Taxonomic references

Claereboudt, M. and Hoeksema, B.W. 1987. Fungia (Verrillofungia) spinifer spec. nov., a new scleractinian coral (Fungiidae) from Indo-Malayan region. *Zool. Mededelingen*, **61** : 303-309.

Hoekesma, B.W. 1989. Systematics and ecology of mushroom corals (Scleractinia : Fungiidae). *Zool. Verhandelingen*, **254** : 471pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin* (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. 3 vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Fig. 45. *Fungia spinifer* (Claereboudt and Hoeksema, 1987)

Description : Polyps are circular, up to 125 millimetres diameter,

with a distinct central arch. Septa are densely packed and straight and have fine teeth and granulated sides.

Colour : Brown to greyish-violet.

Key Characters : Disc approximately circular; Septal teeth fine, rounded; Septa cycle uneven; Septa not in two distict orders; Each arch present .... *Fungia spinifer.*

Place of Record : Tarmugli Island, South Andaman (Lat. N-11°33.261' & Long. E- 092°32.591').

Distribution : Fiji, Guam, Indonesia, Japan, Palau, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

46. ***Fungia taiwanensis*** (Hoeksema & Dai, 1991), Fig. 46

Taxonomic references

Hoekesma, B.W. and Dai, C.F. 1991. Scleractinia of Taiwan. II Family Fungiidae (including a new species). *Bull. Inst. Zool. Academia Sinica,* (Taipei) **30** : 203-228.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin,* (**459**) : 46 pp.

Fig. 46. *Fungia taiwanensis* (Hoeksema & Dai, 1991)

Veron, J.E.N. 2000. Corals of the world. 3 vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Coral outline irregularly oval. Oral surface strongly humped. Septa more or less straight, except around secondary mouths. Tentacular lobes usually absent. Septal dentations fine and sharp or varying from slightly lobate to ravel-shaped. Granulations on septal sides fine and evenly distributed. Aboral surface uneven. Detachment scar disappearing in adult stage. Costae irregularly shaped and unequal in size. Costal spines blunt and granular.

Colour : Brown with white tentacles.

Key Characters : Disc not disctively circular; Disc irregular shaped; Surface with peripheral mouth ..... *Fungia taiwanensis.*

Place of Record : Off Laxman Beach, Great Nicobar Island (Lat. 07°01.480'-N, Long. 93°55.237-E)

Distribution : Indonesia, Papua New Guinea, Philippines and Solomon Islands.

IUCN Red List Category and Criteria : Vulnerable.

Genus ***Lithophyllon*** Rehberg, 1892

Taxonomic references

Yabe, H., Sugiyama, T. and Eguchi, M. 1936. Recent reef building corals from Japan and the South Sea Islands under the Japanese mandate. *Sci. Rept. Tohoku Univ. Second Ser.*, (Geology) **1** : 166 pp.

Veron, J.E.N. 1992. Hermatypic corals of Japan. *Australian Inst. mar. Sci. monogr. Ser.*, **IX** : 86pp.

Description : Colonies are flat, attached, and encrusting or explanate, with one or many centres. Colony walls are solid; septo-costae are *Cycloseris*-like.

Key Characters. Colonial; Colony attached to substrate; Colony mostly encrusting ..... Genus *Lithophyllon.*

47 ***Lithophyllon lobata*** (Horst, 1921), Fig. 47

Taxonomic references

Horst, C.J. van der. 1921. The Madreporaria of the Siboga Expedition. II. Madreporaria Fungida. *Siboga-Expeditie* **16b** : 53-98.

Veron, J.E.N. and Hodgson, G. 1989. Annotated checklist of the hermatypic corals of the Philippines. *Pacific Sci.*, **43** : 234-287.

Veron, J.E.N. 1992. Hermatypic corals of Japan. *Australian Inst. Mar. Sci. monogr. Ser.*, **IX** : 86pp.

Veron, J.E.N. 2000. Corals of the world. 3 vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are encrusting, has one large central corallite is formed and this is distinctive. Peripheral corallites are usually much smaller. Sometimes there is a small cluster of central corallites. Septo-costae radiate from the central corallite, are thin, wavy and exsert and may have tentacular lobes.

Colour : Brown, may be mottled.

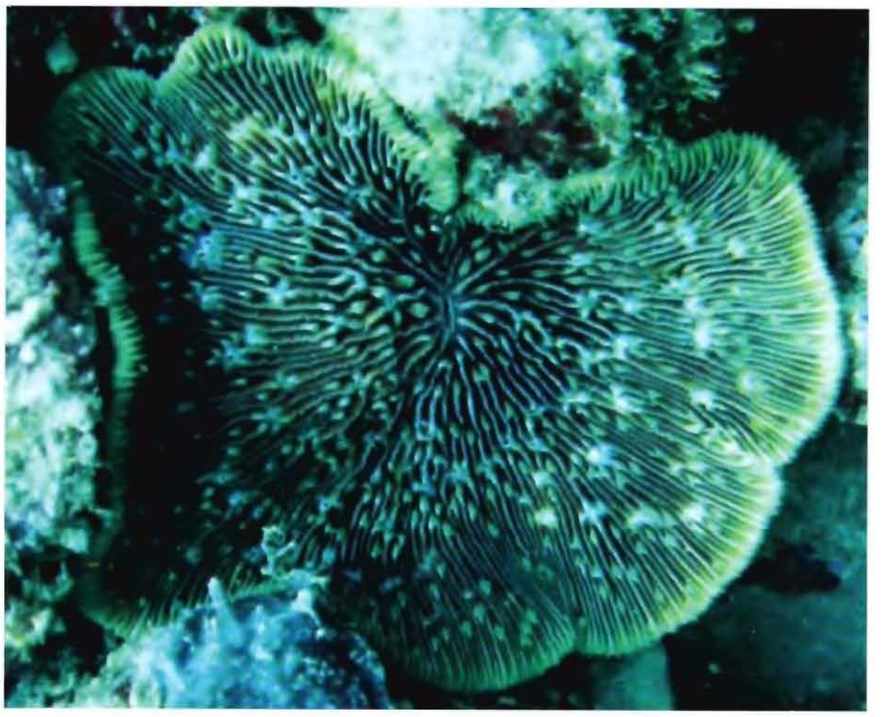


Fig. 47. *Lithophyllon lobata* (Horst, 1921

Key Characters. Central corallite distinguishable; Septo-costae not thick, colony not small.....*Lithophyllon lobata.*

Place of Record : Smith Island, North Andaman, (Lat. N-13°18.406' & Long. E-93°04.207'),

Distribution : Japan, Philippines, Solomon Islands.

IUCN Red List Category and Criteria : Near Threatend.

Family PECTINIIDAE Vaughan and Wells, 1943

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonies are basically laminar and rare composed of thin plates. Corallite walls are absent or formed by the non-porous coenosteum of the laminae.

Genus ***Mycedium*** Oken, 1815

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonies are laminar. Corallites are exsert and inclined towards the margins of the laminae. The coenosteum is not pitted at the commencement of new septo-costae. Tentacles are usually extended only at night.

Key Characters : Corallites more conspicuous than coenostial structures; Colonial; Coenostial pits absent; Corallites inclined ..... Genus *Mycedium*.

48. ***Mycedium robokaki*** Moll and Borel-Best, 1984, Fig. 48

Taxonomic references

Moll, H. and Borel-Best, M. 1984. New scleractinian corals (Anthozoa : Scleractinia) from Spermonde Archipelago, South Sulawesi, Indonesia. *Zool. Mededelingen*, **58** : 47-58.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Fig. 48. *Mycedium robokaki* Moll and Borel-Best, 1984

Description : Colonies are composed of small, thin, unifacial laminae, usually with non-wavy

margins. Corallites are small, strongly inclined on the laminae and are sometimes arranged concentrically. Septo-costae are compact and have ornamented spines.

Colour : Tan or pinkish, with pale margins to laminae.

Key Characters : Colonies mostly convoluted laminae; Corallites <6mm. diameter; Corallites well developed ..... *Mycedium robokaki.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution : Australia, Fiji, Indonesia, Japan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Least Concern

Genus ***Pectinia*** Oken, 1815

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonies are laminar to branching and covered with high, thin, acute, irregular walls which usually from short wide valleys. Valleys may be as short as they are wide and the walls may form tall spires, becoming branches. Corallite centres may occur in any position. They have a few widely spaced septo-costae and little or no columella formation. Septo-costae are well developed and may form the start of walls or spires. Tentacles are only extended at night and then only rarely, when a circle of the long tubular tentacles surrounds each corallite centre.

Key Characters : Colonial structure very conspicuous .... Genus *Pectinia.*

49. ***Pectinia teres*** Nemenzo, 1981, Fig. 49

Synonym

Pectinia diversa Nemenzo & Montecillo, 1981

Taxonomic reference

Nemenzo, F. and Montecillo, E. 1981. Four new scleractinian species from Argangasa Islet (Surigao del sur Province, Philippines). *Philippine Sci.*, **18** : 120-128.

Veron JEN and Hodgson G 1989. Annotated checklist of the hermatypic corals of the Philippines. *Pacific Sci.*, **43** : 234-287.

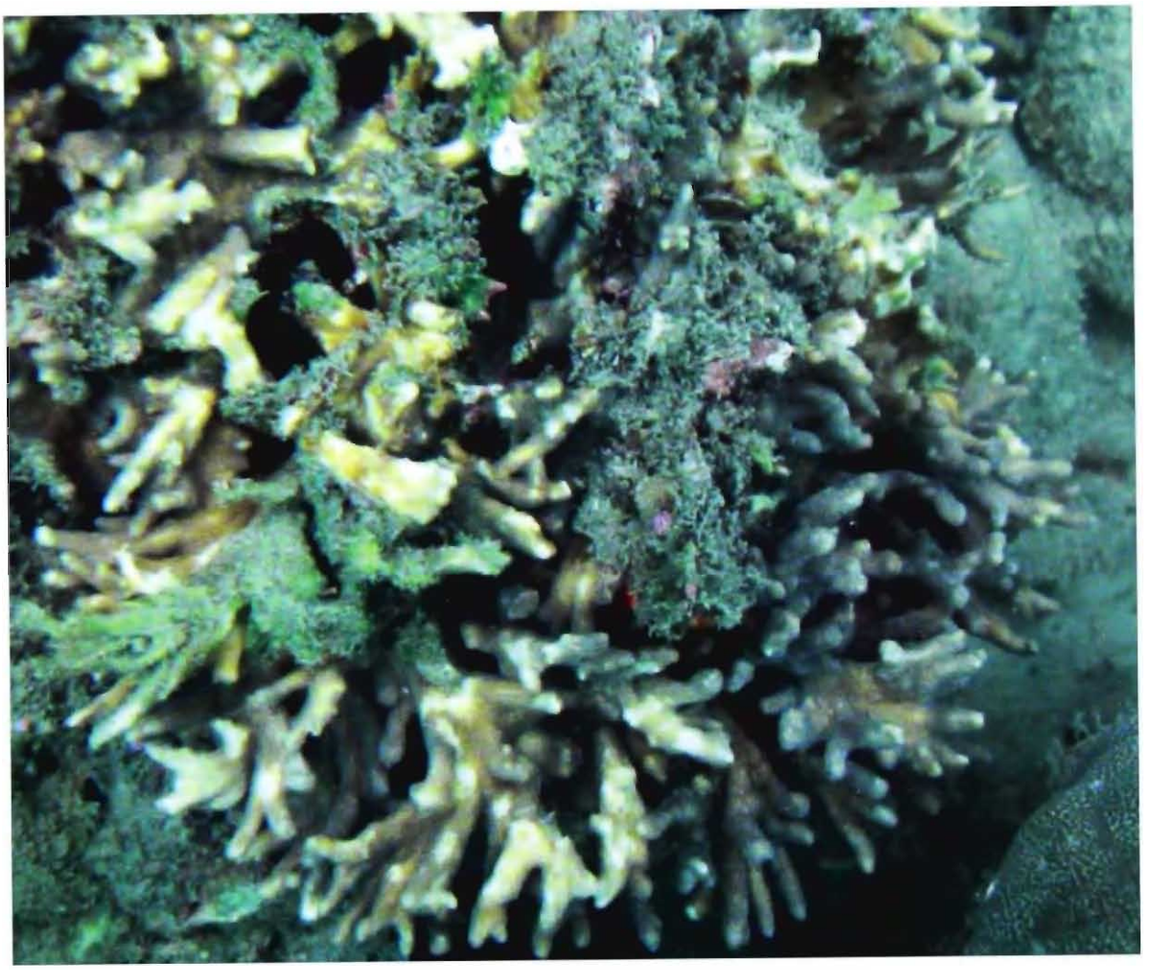


Fig. 49. *Pectinia teres* Nemenzo, 1981

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies have little formation of laminae, but form clumps of pointed branch-like spires, each composed of exert costae. Well developed colonies are clumps of spires. Corallites are conspicuous.

Colour : Yellow-brown or grey.

Key Characters : Colonies branching; Colonies without basal laminae; Branches >3 mm diameter..... *Pectinia teres.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Australia, Indonesia, Japan, Papua New Guinea, Philippines, Solomon Islands and Thailand.

IUCN Red List Category & Criteria : Near Threatened.

Family DENDROPHYLLIDAE Grey, 1847

Taxonomic references

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Zibrowius, H. 1980. Les scleractiniaires de la Maditerranee et de l'Atlantique nord-oriental. *Memories De L'Inst. Oceanog.*, **11** : 1-227.

Description : Solitary or colonial, mostly zooxanthalate. Corallite walls are porous, usually composed of coensteum. Septa are fused in a distinctive pattern (Pourtales Plan), at least in immature corallites.

Genus ***Dendrophyllia*** de Blainville, 1830

Taxonomic reference

Wells, J.W. and John, W. 1986. *A list of Scleractinian generic and subgeneric taxa.*, **69** : 1758-1985.

Description : Corals azooxanthellate, colonial, and attached, some species up to 50 cm in height. Colonies may be small and bushy or dendroid with sympodial branching, but in either case branching is extra tentacular. Theca porous (synapticulothecate) and longitudinally costate, feeling sandy to the touch. Inner and upper septal edges smooth, the septa arranged in a Pourtal & engraves plan. Columella prominent : spongy or papillose.

50. ***Dendrophyllia robusta*** (Bourne, 1905), Fig. 52

Synonyms

Lobopsammia robusta Bourne, 1905

Dendrophyllia klunzingeri van der Horst, 1926

Taxonomic reference

Bourne, G.C. 1905. Report on the solitary corals collected by Professor Herdman, at Ceylon, in 1902. *Ceylon Pearl Oyster Fisheries, Supplementary Reports*, **29** : 187-241.

Cairns, S.D. and Stephen, D. 1999. Species richness of recent Scleractinia. *Atoll Research Bulletin*, **59** : 1-46.

Fig. 50. *Dendrophyllia robusta* (Bourne, 1905)

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Description : Colonies are small, arborescent, consisting of gently bent, long axial corallite and sparsely branching lateral corallites, these latter being elongate-conical and also gently bent in irregular directions. Septa thin, hexamerally arranged in 5 cycles. Columella is discrete, spongy mass.

Colour : Reddish orange and blackish green.

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Israel, Japan, Myanmar, South Africa, Sri Lanka and Viet Nam.

IUCN Red List Category and Criteria : No entries found.

Genus ***Tubastraea*** Lesson, 1829

Taxonomic reference

Wells, J.W. and John, W. 1986. *A list of Scleractinian generic and subgeneric taxa*, **69** : 1758-1985.

Description : This azooxanthellate coral (lacks photosynthetic symbionts) forms low-growing, tufted clumps of corallites that arise from a common base; some *Tubastrea* colonies are taller and tree-like. They are red, brilliant orange or dark green in color. Polyps are sometimes partially extended during the day, and at night the corallum is hidden by a ring of bright yellow tentacles. The rest of the polyp is orange or red in color. Corallites are cylindrical or tubinate, with a diameter across the top of about 5 to 15mm. They are well separated (except newly budded ones) and distinct; intervening perithecal areas appear smooth or faintly ridged. Living tissues are fleshy and obscure the smaller septa (smooth to the touch), but the major ones are just visible. Septa are numerous and arranged in cycles. In young calices the inner ends of smaller septa curve and unite with their neighbors (Pourtalès plan), but in mature calices they are free and normal. Septal margins are smooth or finely and irregularly dentate. Costae are present as low ridges. The skeleton is porous. Occurs in clumps on the sides of reef patches, in caves, and in underhangs.

51. ***Tubastrea diaphana*** Dana, 1846, Fig. 51

Taxonomic reference:

Cairns, S.D. and Stephen, D. 1999. Species richness of recent Scleractinia. *Atoll Research Bulletin*, **59** : 1-46.

Description : Colonies are colonial, corallites are phaceloid, consisting of bushy cluster of cylindrical corallites budded from narrow common coenosteum or lower part of other corallites. Costae as low ridges covered with minute granules and separated by porous inter-costal furrows. Septa hexamerally arranged in 4 cycles, Columella usually as small, elongate, fascicular mass.

Fig. 51. *Tubastrea diaphana* Dana, 1846

Colour : Black-green.

Place of Record Pongibalu, Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Indo-Pacific.

IUCN Red List Category and Criteria : No entries found.

52. ***Tubaastrea faulkneri*** (Wells, 1982), Fig. 54

Taxonomic reference

Cairns, S.D. and Stephen, D. 1999. Species richness of recent Scleractinia. *Atoll Research Bulletin*, **59** : 1-46.

Description : The dendroid colonies are very lightweight and are ahermatypic. Tubular and very apparent corallites rise off a generally ball-like main skeletal body, and are covered with a skin-like orange coenosteum. Septa are prominent and obvious, especially in fully contracted specimens. The polyps are large and extend. These corals have thick and sharply tapered tentacles, with the nematocyst buds and batteries visible as opaque spots on the translucent yellow to orange tentacles. A prominent central mouth is apparent, and completes an overall polyp one that truly typifies the polyp formation.

Coloour : Pinkish-orange body with bright yellow polyps.

Place of Record : Great Nicobar Island, Nicobar (Lat. 07°01.480'-N, Long. 93°55.237-E)

Fig. 52. *Tubaastrea faulkneri* (Wells, 1982)

Distribution : Australia : [New South Wales, Queensland, Western Australia, Ecuador : Galapagos], Indonesia, Palau and Philippines.

IUCN Red List Category and Criteria : No entries found.

Family MUSSIDAE Ortmann, 1890

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : All species are zooxanthalate, solitary or colonial. Skeleton structure are solid. Corallites and valleys are large. Septa have large teeth or lobes. Columellae and walls are thick and well developed.

Genus ***Lobophyllia*** de Blainville, 1830

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonies are phaceloid to flabello-meandroid, either flat topped or dome-shaped. Corallites and/or valleys are large. Septa are large with long teeth. Columella centres are broad and compact. Tentacles are extended only at night. They usually have white tips.

Key Characters : Colonial; Corallites >12 mm diameter; Colony phaceloid to flabello-meandroid; Corallites numerous ..... Genus *Lobophyllia*.

53. ***Lobophyllia robusta*** Yabe and Sugiyama, 1936, Fig. 53

Taxonomic references

Yabe, H. and Sugiyama, T. 1936. In : Yabe, H., Sugiyama, T. and Eguchi, M. 1936. Recent reef building corals from Japan and the South Sea Islandsunder the Japanese mandate. *Sci. Rept. Tohoku Univ. Second Ser.*, (Geology) **1** : 166 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are usually consist of a few corallites but may become large and hemispherical. Corallites are large, phaceloid and mostly monocentric. Septa have sharp exsert teeth. Polyps are thick and fleshy, with a rough surface.

Colour : Bluish grey sometimes with pale valley floor or septo-costae.

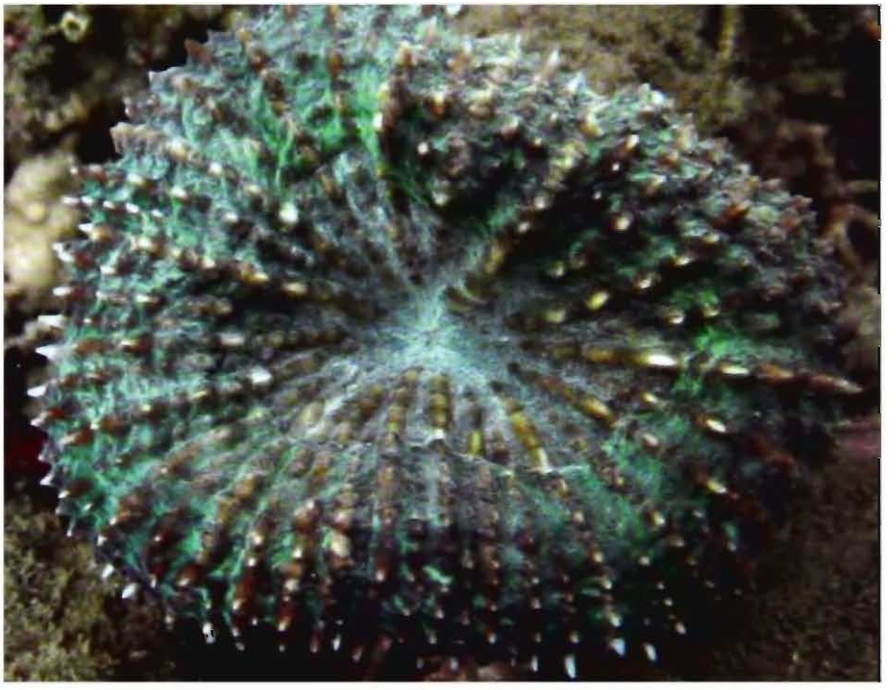


Fig. 53. *Lobophyllia robusta* Yabe and Sugiyama, 1936

Key Characters : Corallites mostly phaceloid; Corallites >40 mm diameter ..... *Lobophyllia robusta.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Australia, Fiji, Indonesia, Japan, Madagascar, Malaysia, Papua New Guinea, Philippines, Solomon Islands, Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

Genus ***Symphyllia*** Milne Edwards and Haime, 1848

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris. 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonies are meandroid and either flat-topped or dome-shaped. Valleys are wide. A groove usually runs along the top of the walls. Septa are large, with long teeth. Columellae are broad and compact. Tentacles are only extended at night.

54. ***Symphyllia valenciennesii*** Milne Edwards & Haime, 1849, Fig. 54

Taxonomic references

Milne Edwards, H. and Haime, J. 1849. Recherches sur les Polypiers. Mémoire 4, Monographie des Astreides (1). *Annales des Sciences Naturelles, Zoologie* (3) **11** : 233-312.

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle- aledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia.Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are usually fat. Valleys radiated from a flat central

area and have steep sides and flat floors. Walls have a moderately fleshy appearance and usually have a groove along the top. Septa are thick, with large teeth. Polyps may be fleshy.

Colour : Greyish brown.

Key Characters
Peripheral and central valleys not similar ... ..*Symphyllia valenciennesii.*

Place of Record : Great Nicobar Island, Nicobar (Lat.- 07°01.480'-N, Long. 93°55.237-E), Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808'), Neil Island, Ritchie's Archipelago (Lat.- N-11°50.826' & Long.-E-093°00.554').

Fig. 54. *Symphyllia valenciennesii* Milne Edwards & Haime, 1849

Distribution : American Samoa, Australia, Fiji, Indonesia, Japan, Madagascar, Malaysia, Maldives, Marshall Islands, Myanmar, Papua New Guinea, Philippines, Saudi Arabia, Seychelles, Singapore, Solomon Islands, South Africa, Taiwan, Province of China, Thailand, Tonga, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

55. ***Symphyllia erythraea*** (Klunzinger, 1879), Fig. 55

Taxonomic references

Milne Edwards, H. and Haime, J. 1849. Recherches sur les Polypiers. Mémoire 4, Monographie des Astreides (1). *Annales desSciences Naturelles, Zoologie,* (3)**11** : 233-312.

Scheer, G. and Pillai, C.G. 1983. Report on the stony corals from the Red Sea. *Zoologica* (Stuttgart) **133** : 98 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin,* (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Fig. 55. *Symphyllia erythraea* (Klunzinger, 1879)

Description Colonies are massive, becoming hemispherical. Valleys are short, usually with less than three centres. Septa are in two orders, with tall teeth. Columellae are well formed.

Colour : Mottles or uniform brown, grey, green or cream.

Key Characters : Peripheral and central valleys similar; Valleys short, submeandroid ..... *Symphyllia erythraea.*

Place of Record : North Reef Island, North Andaman (Lat. N-12° 56. 084' & Long. E-92° 57.345').

Distribution : Egypt, Madagascar, Myanmar, Saudi Arabia, Sudan, United Republic of Tanzania.

Red List Category & Criteria : Least Concern.

Genus ***Scolymia*** Haime, 1852

Taxonomic references

Wells, J.W. 1971. *Note on the scleractinian corals* Scolymia lacera *and* S. cubensis *in Jamaica. Bull Mar. Sci.*, **21** : 960-9633.

Veron, J.E.N. and Pichon, M. 1980. *Scleractinia of Eastern Australia.* Part 3, *Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Fenner, D.P. 1993. Species distinction among several Caribbean stony corals. *Bull. Mar. Sci.*, **53**(3) : 1099-1116.

Description : Corals are usually moncentric, rarely polycentric. Secondary centres may occur inside or outside the original calice and calices may divide. Walls are indistinct beneath the septo-costae. Septa slope evenly, with blunt teeth. Columellae are broad and compact. Tentacles are extended only at night.

Key Characters : Not colonial; Septal teeth pointed ..... Genus *Scolymia.*

56. ***Scolymia vitiensis*** Bruggemann, 1877, Fig. 58

Synonyms

Parascolymia vitiensis (Brüggemann, 1877)

Lithophyllia vitiensis (Brüggemann, 1877)

Taxonomic references

Brüggemann, F. 1877. Notes on stony corals in the collection of the British Museum. III. A revision of the recent solitary Mussaceae. *Annals and Magazine of Natural History*, (4)**20** : 300-313.

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are large and colonial. Septa slope up from the columellae to an indistinct wall then costae slope down to the periphery.

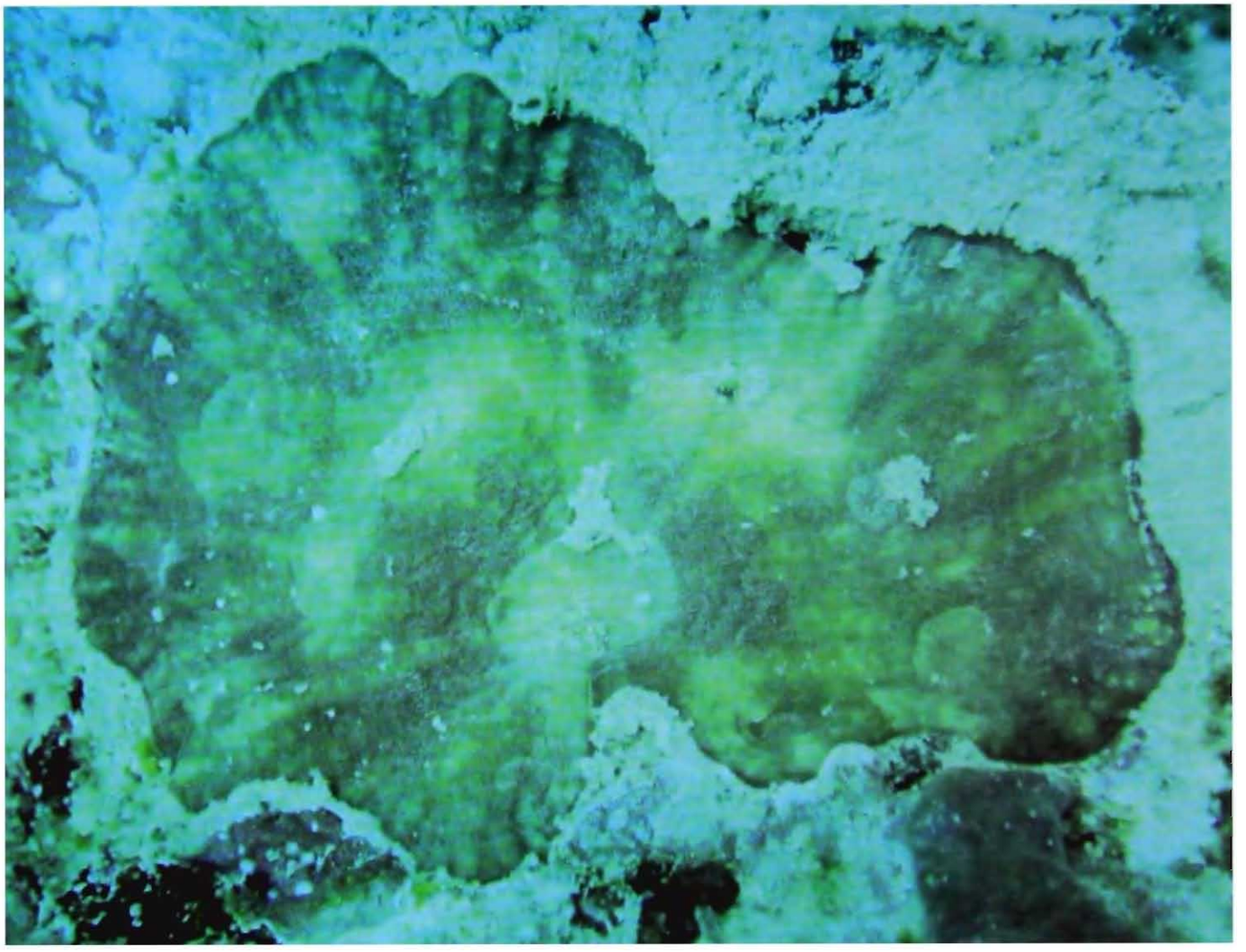


Fig. 56. *Scolymia vitiensis* Bruggemann, 1877

This gives the fleshy mantle of the polyps a distinctive concentric texture. Secondary centres occur near the colony centres and also around the periphery. Septo-costae are sturdy, with large blunt teeth.

Colour : Dark green and reddish orange.

Key Characters : Polyps >60 mm diameter; Outer wall of polyp slopes outward ..... *Scolymia vitiensi.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution : Australia, British Indian Ocean Territory, Cook Islands, Djibouti, Fiji, Indonesia, Japan, Madagascar, Malaysia, Maldives, Mauritius, New Caledonia, Papua New Guinea, Philippines, Pitcairn, Réunion, Saudi Arabia, Solomon Islands, South Africa, Taiwan, Province of China, Tonga, Vanuatu, Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

Genus ***Mycetophyllia*** Milne Edwards and Haime, 1848

Taxonomic reference

Wells, J.W. 1973b. New and old scleractinian corals from Jamaica. *Bull. Mar. Sci.*, **23** : 16-58.

Description : Colonies are flat plates with radiating valleys. Septo-costae are exsert, columallae are poorly developed. Tentacles are usually small or apparently absent except at the margings of colonies.

Key Characters : Colonial; Corallites >12 mm diameter; Colony meandroid; Septal teeth not very prominent; Valleys mostly radiate .... Genus *Mycetophyllia.*

57 ***Mycetophyllia danaana*** Milne Edwards and Haime, 1849, Fig. 57

Taxonomic references

Wells, J.W. 1973. New and old scleractinian corals from Jamaica. *Bull. Mar. Sci.*, **23** : 16-58.

Cairns, S.D. 1982. Stony corals (Cnidaria : Hydrozoa, Scleractinia) of Carrie Bow Cay, Belize. *Smithsonian Contrib Mar. Sci.*, **12** : 271-302.

Description : Colonies are solid rounded plates. Long sinuous valleys are radiate from the original point of growth and are sometimes deep. Short valleys walls sometimes form *Hydnophora* like monticules. Septo-costae are thinner than intervening spaces. Columellae are rudimentary or absent. There is one row of mouths in the valleys.

Fig. 57. *Mycetophyllia danaana* Milne Edwards and Haime, 1849

Colour : Green valley with pink walls.

Key Characters : Colonies not thin laminae; Valleys well developed .... *Mycetophyllia danaana.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution : Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, Cayman Islands, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Honduras, Jamaica, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Saint Barthélemy, Saint Kitts and Nevis, Saint Lucia, Saint Martin (French part), Saint Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands, United States, United States Minor Outlying Islands, Venezuela and Virgin Islands.

IUCN Red List Category and Criteria : Least concern.

Family FAVIIDAE Gregory, 1900

Taxonomic references

Wijsman–Best, M. 1972. Systematics and ecology of New Caledonian Faviidae (Coelenterate : Sceractinia). *Bijdragen Dierkunde*, **42** : 1-90.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Description : All species are zooxanthalate and colonial. Septa, paliform lobes, columellae and wall structures, when present, all appear to be structurally similar. Septal structure are simple, columallae are a simple tangle of elongate septal teeth. Walls are composed of thickened septa and cross linkages.

Genus ***Favia*** Oken, 1815

Taxonomic references

Wijsman –Best, M. 1972. Systematics and ecology of New Caledonian Faviidae (Coelenterate : Sceractinia). *Bijdragen Dierkunde*, **42** : 1-90.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. *Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Wijsman–Best, M. 1974. Biological results of the Snellius Expedition.XXV Faviidae collected by the Snellius Expedition. 1 The Genus *Favia. Zool. Mededelingen*, **48** : 249-261.

Description : Colonies are usually massive, either flat or dome-shaped. Corallites are mostly monocentric and plocoid. Daughter corallites are

formed by intratentacular division. Tentacles are extended only at night and are tapered, often with pigmented tips.

Key Characters : Colonies massive or derived from massive; Budding intra-tentacular or meandroid; Colonies placoid; Corallites not exsert..... .....Genus *Favia*.

58. ***Favia albidus*** Veron, 2000, Fig. 58

Taxonomic references

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **3** :112.

Description : Colonies are massive and small. Corallites are large and crowded. Columellae are small, well developed paliform lobes are forming crown around the columellae. Corallite walls are thick and exserted.

Colour Colonies are usually pale brown with thick brown margin along the walls.

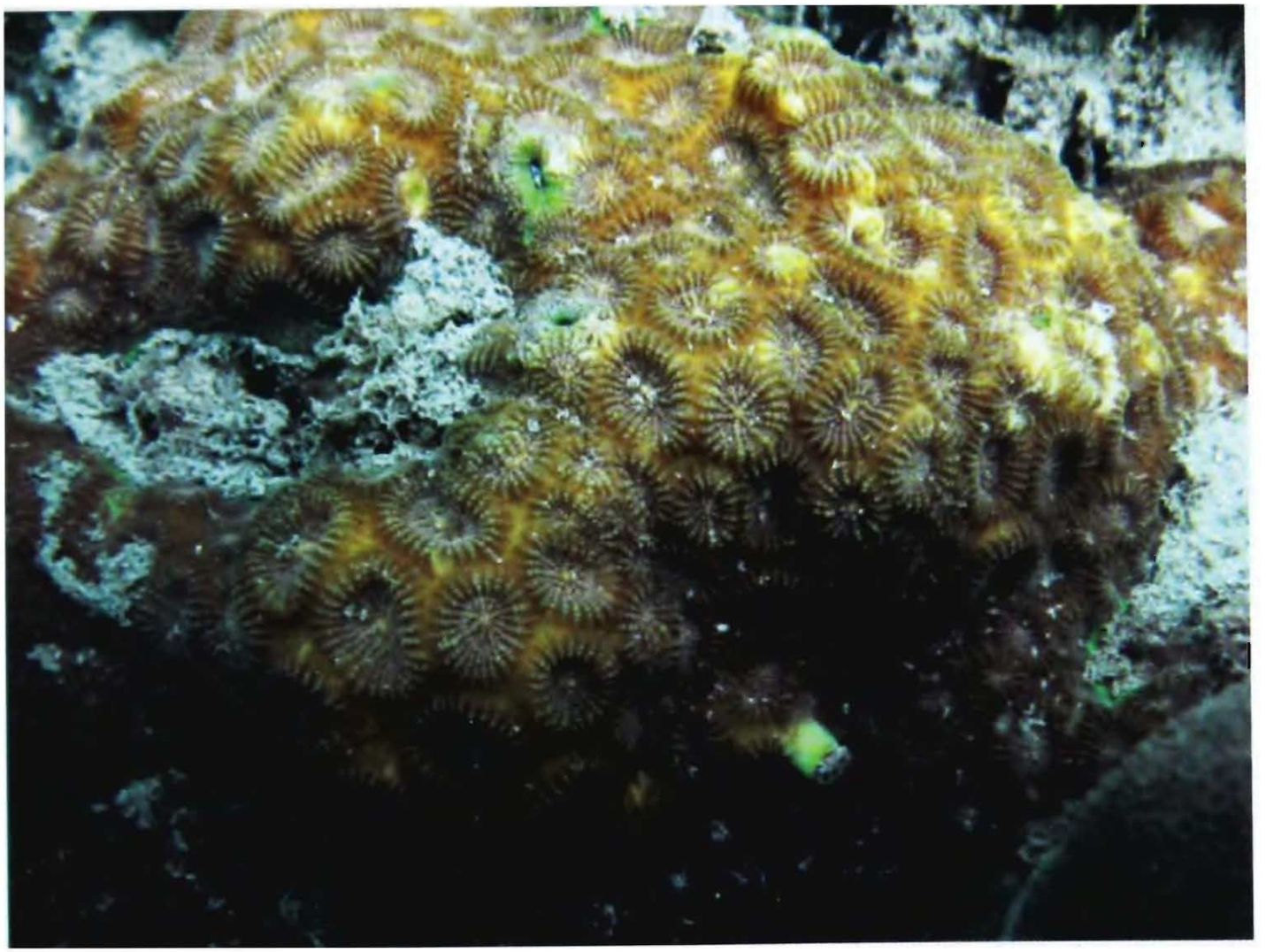


Fig. 58. *Favia albidus* Veron, 2000

Key Characters : Corallites middle sized (8-12 mm diameter); Septa irregular in height; Paliform lobes well developed; Corallites not inclined on the colony ..... *Favia albidus.*

Place of Record : Jolly Buoy Island, South Andaman (Lat. N-11° 30. 251' & Long. E-92° 32.591').

Distribution : Egypt and Saudi Arabia.

IUCN Red List Category and Criteria : Near Threatened.

59. ***Favia lacuna*** Veron, Turak and DeVantier, 2000, Fig. 59

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **3** : 112.

Fig. 59. *Favia lacuna* Veron, Turak and DeVantier, 2000

Description : Colonies are sub-massive to massive, usually more than one metre across. Corallites are sub-placoid, circular to irregular in shape, and crowded. The inner walls of corallites plunge vertically. Septa are thin, uniformly spaced and sub-equal, most reaching the columella deep within the calice. Costae of adjacent corallites do not meet, leaving a narrow ambulacral groove. There are no paliform lobes. Columellae are small and compact.

Colour : Colonies are tan with white centres.

Key Characters : Corallites middle sized (8-12 mm. diameter); Septa not irregular; Corallites not conical; Corallites crowded, irregularly shaped .... *Favia lacuna.*

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116)

Distribution : Saudi Arabia.

IUCN Red List Category and Criteria : Near Threatened.

60. ***Favia lizardensis*** Veron & Pichon, 1977, Fig. 60

Taxonomic references

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977 *Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

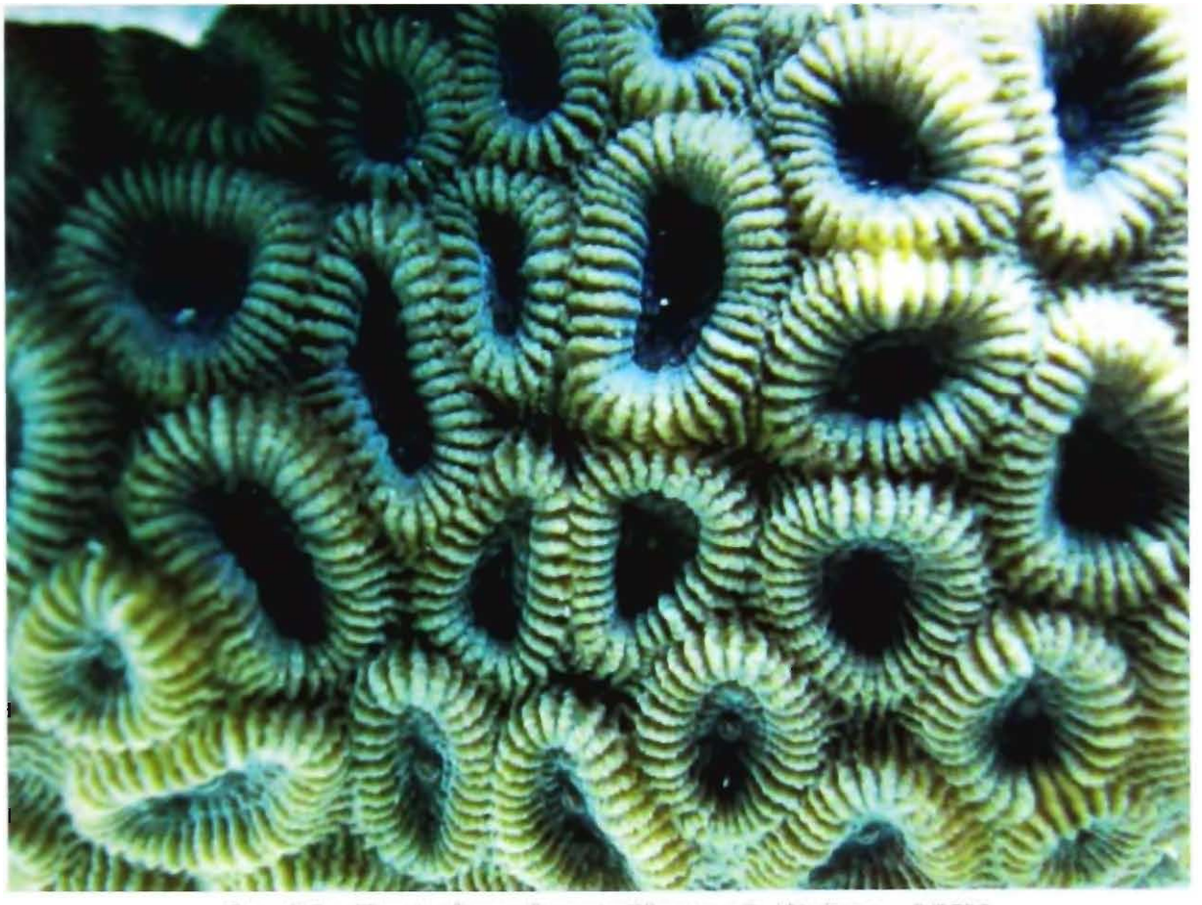


Fig. 60. *Favia lizardensis* Veron & Pichon, 1977

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive and are commonly over one meter across. Corallites are circular, and regularly spaced. Corallite walls are thick but have fine rims. Septa are uniformly thin and widely spaced, without paliform lobes. Costae are well developed.

Colour : Pinkish brown with cream or greenish oral discs.

Key Characters : Corallites large (>12 mm diameter); Corallites not irregularly shaped; Corallites compact or irregularly spaced .... *Favia lizardensis.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066') and Jolly Buoy Island, South Andaman (Lat. N-11° 30. 251' & Long. E-92° 32.591').

Distribution : Australia, China, Djibouti, Hong Kong, Indonesia, Japan, Madagascar, Papua New Guinea, Philippines, Saudi Arabia, Seychelles, Solomon Islands, Taiwan, Province of China, Thailand, Tonga, Vanuatu and Viet Nam.

IUCN Red List Category & Criteria: Near Threatened.

61. ***Favia maxima*** Veron, Pichon, 1977, Fig. 61

Taxonomic references

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. *Scleractinian of Eastern Australia. Part2. Families Faviidae, Trachyphylliidae. Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive and usually small. Corallites have well defined walls. Septa are regular, thickened at the wall and with conspicuous paliform lobes forming a crown around the columella.

Colour : Polyps may be fleshy. Colonies are brown or yellow-brown with dull green or white oral discs.

Fig. 61. *Favia maxima* Veron, Pichon, 1977

Key Characters : Corallites large (>12 mm diameter); Corallites not irregularly shaped; Corallites exsert; Corallites not conical; Corallites not compact; Paliform lobes conspicuous ..... *Favia maxima.*

Place of Record : Avis Island, North Andaman (Lat. N-12° 56. 210' & Long. E-92° 33.066') and Jolly Buoy Island, South Andaman (Lat. N-11° 30. 251' & Long. E-92° 32.591').

Distribution : Australia, British Indian Ocean Territory, Fiji, Guam, Indonesia, Japan, Papua New Guinea, Philippine, Solomon Islands, Taiwan, Province of China, Thailand, Tonga and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

Genus ***Favites*** Link, 1807

Taxonomic reference

Wijsman-Best, M. 1976. Biological results of the Snellius Expedition.XXVII Faviidae collected by the Snellius Expedition. II The Genus *Favites, Goniastrea, Platygyra, Oulophyllia, Leptoria, Hydnophora* and *Caulastrea. Zool. Mededelingen*, **50** : 45-63.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Description : Colonies are usually massive and either flat or - dome shaped. Corallites are monocentric and cerioid, occasionally subplocoid. Adjacent corallites mostly share common walls. Paliform lobes are seldom well developed. Tentacles are extended only at night and share taperd, like those of *Favia.*

Key Characters : Colonies massive or derived from massive; Budding intratentacular or meandroid; Colonies cerioid to secondary meandroid; Paliform lobes present; Paliform lobes not prominent ..... Genus *Favites.*

62. ***Favites micropentagona*** Veron, 2000, Fig. 62

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst Mar Sci and CRR Qld. Pty. Ltd.*, **3** : 137

Fig. 62. *Favites micropentagona* Veron, 2000

Description : Colonies are encrusting to submassive. Corallites are pentagonal in shape and 3-4 millimetres diameter. Septa are in two alternating cycles, with irregular teeth. The paliform crown is clearly developed.

Colour : Pale brown, sometimes with dark oral discs.

Key Characters : Corallites very small (<6 mm diameter); Corallites uniform in shape .....*Favites micropentagona.*

Place of Record : Arial Bay, North Andaman (Lat. N-13°16.093' & Long. E-93°02.433').

Distribution : Indonesia, Japan, Madagascar, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

63. ***Favites paraflexuosa*** Veron, 2000, Fig. 63

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst Mar Sci and CRR Qld. Pty. Ltd.*, **3** : 137

Description : Colonies are hemispherical or flat. Corallites are angular and deep. Septa are even, with fine teeth. Paliform lobes are weekly developed.

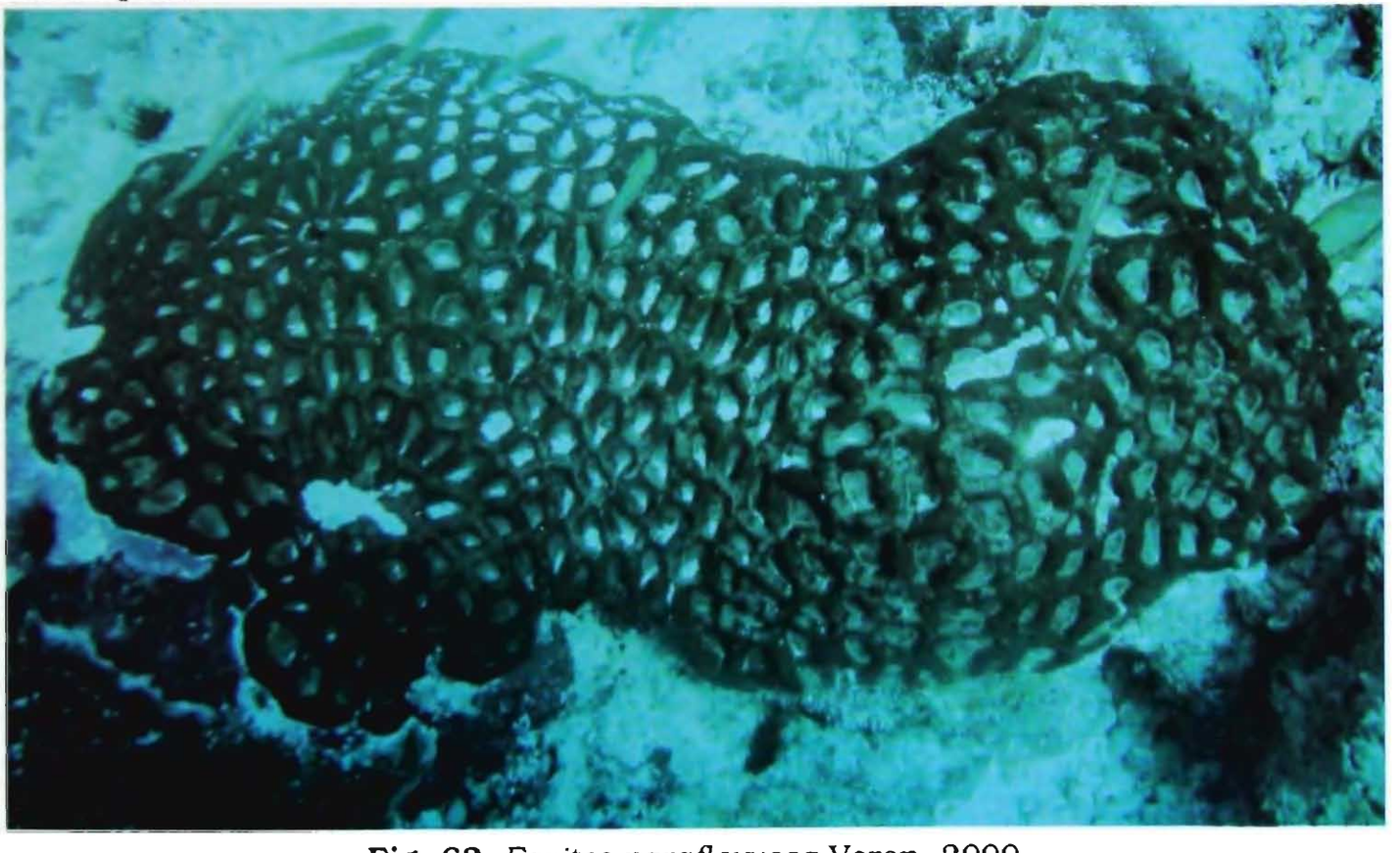


Fig. 63. *Favites paraflexuosa* Veron, 2000

Colour : Brown in colour with pale oral discs.

Key Characters : Corallites large (>14 mm diameter); Corallites angular; Septal teeth not conspicuous ..... *Favites paraflexuosa.*

Place of Record : Car Nicobar Island, Nicobar (Lat. N-9°13.978'& Long. E-092°48.002')

Distribution : Australia, Fiji, Indonesia, Madagascar, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

64. ***Favites spinosa*** (Klunzinger, 1879), Fig. 64

Synonym

Prionastrea spinosa Klunzinger, 1879

Taxonomic references

Klunzinger, C.B. 1879. Die Korallenthiere des Rothen Meeres. *Gutmann*, Berlin, 188 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Fig. 64. *Favites spinosa* (Klunzinger, 1879)

Description : Colonies are small, massive and rounded. Corallites are deeply excavated, with angular walls. Septa are straight, widely spaced and are usually in two alternating orders. Paliform lobes are weakly developed. Septa have very prominent teeth, which have ragged margins. Columellae are small and compact.

Colour : Walls are off-white, centres are dark in colour.

Key Characters : Corallites small (6-10 mm diameter); Corallites angular; Paliform lobes weakly developed or absent; Septa very exert ....*Favites spinosa.*

Place of Record : Tarmugli Island, South Andaman (Lat. N-11°33.261' & Long. E-092°32.591').

Distribution : Djibouti, Indonesia, Madagascar, Maldives, Mauritius, Papua New Guinea, Seychelles, Sri Lanka and Viet Nam.

IUCN Red List Category and Criteria : Vulnerable.

65. ***Favites vasta*** (Klunzinger,1879), Fig. 65

Taxonomic references

Klunzinger, C.B. 1879. Die Korallenthiere des Rothen Meeres. *Gutmann*, Berlin, 188 pp.

Scheer, G. and Pillai, C.G.S. 1983. Report on the stony corals from the Red Sea. *Zoologica* (Stuttgart), **133** : 99 pp.

Fig. 65. *Favites vasta* (Klunzinger, 1879)

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive and are commonly over one metre across. Corallites are deep and angular and have very thick walls. Septa are equal, uniform, not exsert and finely toothed. Paliform lobes are usually present.

Colour : Corallite walls are always uniform amber with cream or white oral discs.

Key Characters : Corallites large (>14 mm diameter); Corallites rounded ..... *Favites vasta.*

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116)

Distribution : French Polynesia, Indonesia, Madagascar, Papua New Guinea, Solomon Islands, United Republic of Tanzania and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

Genus ***Platygyra*** Ehrnberg, 1834

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Wijsman-Best, M. 1976. Biological results of the Snellius Expedition.XXVII Faviidae collected by the Snellius Expedition. II The Genus *Favites, Goniastrea, Platygyra, Oulophyllia, Leptoria, Hydnophora* and *Caulastrea. Zool. Mededelingen*, **50** : 45-63.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Description : Colonies are massive and either flat or dome-shaped. Corallites are usually meandroid but may be cerioid. Paliform lobes are not developed, columellae seldom form centres, but rather form spongy wall like structures. Tentacles are usually extended only at night.

Key Characters : Colonies massive or derived from massive; Budding intratenacular or meandroid; Colonies ceroid to secondary meandroid; Paliform lobes absent or weakly developed; Paliform lobes spongy; Ambulacral groove absent ..... Genus *Platygyra.*

66. ***Platygyra crosslandi*** (Matthai, 1928), Fig. 66

Synonym

Coeloria crosslandi Matthai, 1928

Taxonomic references

Matthai, G. 1928. A monograph of recent Meandroid Astreidae. *Cat. on Madreporarian Corals British Mus., (Nat. Hist.)* **7** : 140 pp.

Scheer, G. and Pillai, C.G.S. 1983. Report on the stony corals from the Red Sea. *Zoologica*, (Stuttgart) **133** : 99 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive or form thick plates. Valleys are short. Walls are thick and rounded, with evenly exsert irregularly dentate septa. Columellae are well developed.

Colour Brown usually with green valleys.

Fig. 66. *Platygyra crosslandi* (Matthai, 1928)

Key Characters : Colonies monocentric or have short valleys; Walls thick, rounded; Valleys not contorted; Collumellae well developed .... *Platygyra crosslandi.*

Place of Record : Arial Bay, North Andaman (Lat. N-13°16.093' & Long. E-93°02.433').

Distribution : Madagascar, Mauritius and United Republic of Tanzania.

IUCN Red List Category and Criteria : Near Threatened.

67 ***Platygyra ryukyuensis*** Yabe & Sugiyama, 1936, Fig. 67

Taxonomic references

Yabe H and Sugiyama, T. 1936. In : Yabe, H., Sugiyama, T. and Eguchi, M. 1936. Recent reef building corals from Japan and the South Sea Islandsunder the Japanese mandate. *Sci. Rept. Tohoku Univ. Second Ser.*, (Geology) **1** : 166 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive with mostly short valleys. Some colonies are monocentric or nearly so. Valleys are narrow (3-4.5 mm wide) and walls are thin. Septo-costae are irregular and have irregular teeth. There are no paliform lobes.

Fig. 67. *Platygyra ryukyuensis* Yabe & Sugiyama, 1936

Colour : Dark brown, some times green.

Key Characters : Colonies monocentric or have short valleys; Walls not thick, rounded; Valleys mostly have several centres..... .....*Platygyra ryukyuensis.*

Place of Record : Great Nicobar Island, Nicobar (Lat. 07°01.480'-N, Long. 93°55.237-E).

Distribution : Australia, Indonesia, Japan, Madagascar, Malaysia, Papua New Guinea, Philippines, Seychelles, Solomon Islands, Taiwan, Province of China, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened

Genus ***Solenastrea*** Milne Edwards and Haime, 1848

Taxonomic reference

Zlataski, V.N. and Estalella, N.H. 1982. Les scleractiniaires de Cuba avec des donnees sur les organisms associes. *Editions Acad. Bulgare Sci. Sofia*, 472 pp.

Description : Colonies are massive, hemispherical or with irregular upgrowths. Corallites are widely spaced, circular and equal in size. Long and short septo-costae slightly alternate. The coenosteum is smooth or blistery. Tentacles are some times extended during the day.

Key Characters : Colonies massive to columnar ..... Genus *Solenastrea.*

68. ***Solenastrea bournoni*** Milne Edwards and Haime, 1849, Fig. 68

Taxonomic references

Milne Edwards, H. and Haime, J. 1850. Recherches sur les Polypiers. Mémoire 4, Monographie des Astreides (1). *Annales des Sciences Naturelles, Zoologie* (3)**12** : 95-197.

Zlataski, V.N. and Estalella, N.H. 1982. Les scleractiniaires de Cuba avec des donnees sur les organisms associes. *Editions Acad. Bulgare Sci. Sofia*, 472 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive, forming hemispherical domes with smooth or slightly irregular surfaces. Corallites rims form conspicuous dark circle. Tentacles, which may be extended during the day, are long, giving colonies a ragged appearance.

Colour : Cream in colour with green polyps.

Key Characters : Colonies massive ..... *Solenastrea bournoni.*

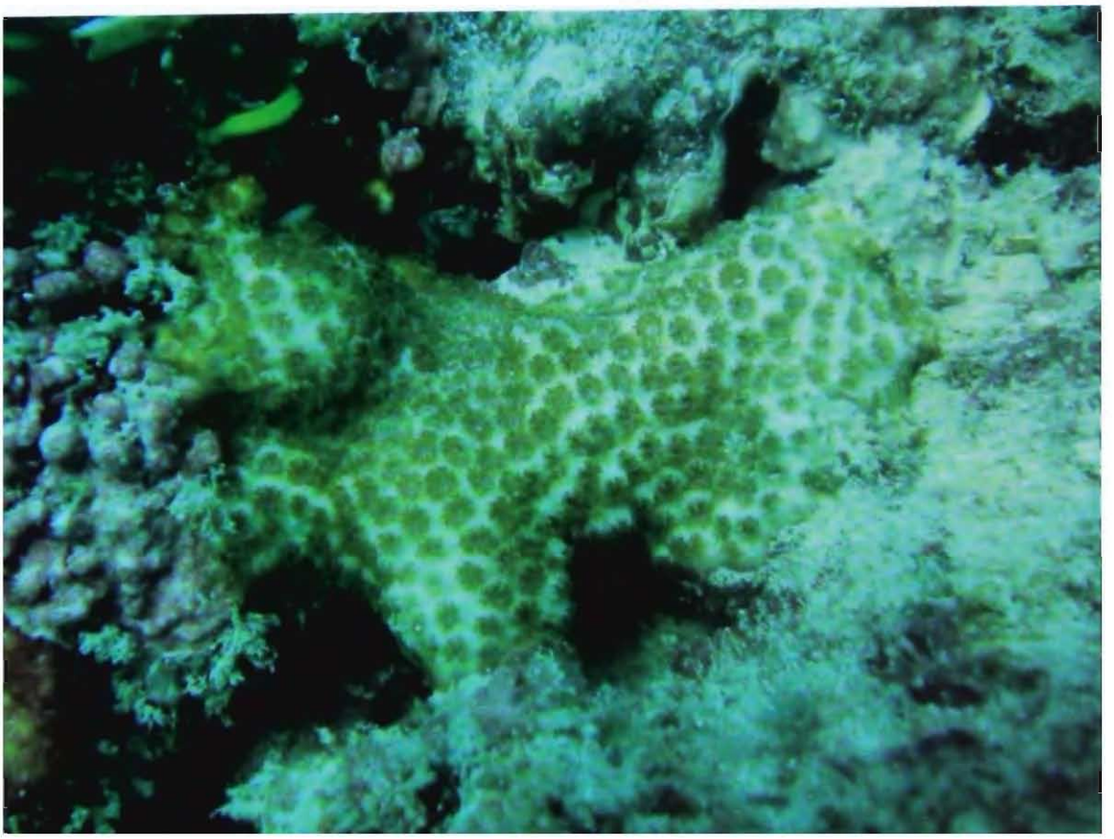


Fig. 68. *Solenastrea bournoni* Milne Edwards and Haime, 1849

Place of Record : Car Nicobar Island, Nicobar (Lat. N-9°13.978' & Long. E-092°48.002').

Distribution : Belize, Guadeloupe, Honduras, Martinique, Mexico, Montserrat, Netherlands Antilles, Puerto Rico, United States of America and Venezuela.

IUCN Red List Category and Criteria : Least Concern.

Genus ***Oulophyllia*** Milne Edwards and Haime, 1848

Taxonomic references

Wijsman-Best, M. 1976. Biological results of the Snellius Expedition XXVII Faviidae collected by the Snellius Expedition. II The Genus *Favites, Goniastrea, Platygyra, Oulophyllia, Leptoria, Hydnophora* and *Caulastrea. Zool. Mededelingen*, **50** : 45-63.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Description : Colonies are massive and monocentric to meandroid, composed of large valleys with widely spaced, ragged septa and acute thin walls. Paliform lobes are usually present. Polyps are large and fleshy and tentacles are extended only at night. When tentacles are reyracted, polyps have a coarse reptilian texture. Mouths are conspicuous.

Key Characters : Colonies massive or derived from massive; Budding intratentacular or meandroid; Colonies cerioid to secondary meandroid; Paliform lobes present; Paliform lobes prominent; Valleys >10 mm across; Ambulacral groove absent ..... Genus *Oulophyllia.*

69. ***Oulophyllia bennettae*** (Veron and Pichon, 1999), Fig. 69

Synonym

Favites bennettae Veron, Pichon & Wijsman-Best, 1977

Taxonomic references

Veron, J.E.N., Pichon M. and Wijsman-Best M. 1977. *Scleractinian of Eastern Australia. Part 2.* Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. *Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. Atoll Research Bulletin,* (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. Australian Institute of Marine Science and CRR Qld Pty Ltd.

Description : Colonies are massive with large angular corallites, which may have up to three columellae. Septa are widely spaced, with large rounded teeth and some development of paliform lobes. Septa of adjacent corallites are aligned.

Fig. 69. *Oulophyllia bennettae* (Veron and Pichon, 1999)

Colour : Distinctive greenish-grey with green oral discs.

Key Characters : Valleys with less than 3 centre .... *Oulophyllia bennettae.*

Place of Record : Car Nicobar Island, Nicobar (Lat. N-9°13.978'& Long. E-092°48.002').

Distribution : Australia, Djibouti, Fiji, Indonesia, Japan, Madagascar, Malaysia, Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Tonga, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

Genus ***Leptoria*** Milne Edwards and Haime, 1848

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Wijsman-Best, M. 1976. Biological results of the Snellius Expedition-XXVII Faviidae collected by the Snellius Expedition. II The Genus *Favites, Goniastrea, Platygyra, Oulophyllia, Leptoria, Hydnophora* and *Caulastrea. Zool. Mededelingen*, **50** : 45-63.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Description : Colonies are massive or encrusting with sinuous valleys and neatly arranged equal septa and no paliform lobes. Tentacles are only extended at night.

Key Characters : Colonies massive or derived from massive; Budding intratenacular or meandroid; Colonies ceroid to secondary meandroid; Paliform lobes absent or weakly developed; Paliform lobes wall like .....Genus *Leptoria.*

70. ***Leptoria irregularis*** Veron, 1990 , Fig. 70

Taxonomic references

Veron, J.E.N. 1990a. *New Scleractinian from Japan and other Indo-West Pacific Countries.* Galaxea **9**: 95-173.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll. Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are laminar. Septa are irregular with strong teeth. Valleys are perpendicular to colony margins.

Colour : Colonies are Brownish yellow with creamy line on the margins.

Fig. 70. *Leptoria irregularis* Veron, 1990

Key Characters Paliform walls not solid ..... *Leptoria irregularis.*

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116) and : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159') and North Reef Island, North Andaman (Lat. N-12° 56. 084' & Long. E-92° 57.345').

Distribution : Australia, Indonesia, Japan, Papua New Guinea and Philippines.

IUCN Red List Category and Criteria : Vulnerable.

Genus ***Diploria*** Milne Edwards and Haime, 1848

Taxonomic reference

Walton Smth, F.G. 1971. Atlantic reef corals (2nd edn). *Univ. Miami Press*, 164 pp.

Description : Colonies are massive and meandroid. Columellae are interlinked. Paliform lobes are weakly developed or absent. Tentacles are extended only at night.

Key Characters : Colonies massive or derived from massive; Budding intratentacular or meandroid; Colonies ceroid to secondary meandroid; Paliform lobes absent or weakly developed; Paliform lobes spongy; Ambulacral groove present ..... Genus *Diploria.*

71. ***Diploria strigosa*** (Dana, 1848), Fig. 71

Synonym

Meandrina strigosa Dana, 1846

Taxonomic references

Dana, J.D. 1846. Zoophytes. United States Exploring Expedition during the years 1831-1842 under the command of Charles Wilkes 8: 1-740. Lea and Blanchard-Philadelphia.

Roos, P.J. 1971. The shallow water stony corals of the Netherlands Antilles. *Studies on the Fauna of Curacio and other Caribbean Islands*, **130** : 108 pp.

Cairns, S.D. 1982. Stony corals (Cnidaria : Hydrozoa, Scleractinia) of Carrie Bow Cay, Belize. *Smithsonian Contrib. Mar. Sci.*, **12** : 271-302.

Zlataski, V.N. and Estalella, N.H. 1982. *Les scleractiniaires de Cuba avec des donnees sur les organisms associes*. Editions Acad Bulgare Sci Sofia 472pp.

Cairns, S.D. 1991. Catalog of the type specimens of stony corals (Milleporidae, Stylasteridae, Scleractinia) in the National Museum of Natural History, Smithsonian Institution. *Smithsonian Contributions to Zoology*, (**514**) : 59 00.

Fig. 71. *Diploria strigosa* (Dana, 1848

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive or encrusting. The surface is even, with sinuous valleys 6-9 mm wide. Interlinked columellae are well developed. Ambulacral grooves are fine.

Colour : Greenish grey.

Key Characters : Ambulacral groove not distinct; Valleys not irregular ..... *Diploria strigosa.*

Place of Record : Tarmugli Island, South Andaman (Lat. N-11°33.261' & Long. E- 092°32.591')

Distribution : Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Colombia, Cuba, Dominica, Dominican Republic, Guadeloupe, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, Saint Lucia, Trinidad and Tobago, Turks and Caicos Islands, United States of America, United States Virgin Islands and Venezuela.

IUCN Red List Category and Criteria : Least Concern.

Genus ***Cyphastrea*** Milne Edwards and Haime, 1848

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233pp.

Wijsman-Best, M. 1980. Indo-Pacific coral species belonging to the subfamily Montastreinae Vaughan and Wells, 1943 (Scleractinia, Coelenterata). Part 1 : *The* genera *Cyphastrea, Leptastrea, Echinophora* and *Diplostrea. Zool. Mededelingen*, **55** : 235-263.

Description : All the species (except *C. decadia*) are massive or encrusting. Corallites are placoid, with small calices. Costae are generally restricted to the corallite wall, the coensteum is granulated. Tentacles are usually extended at night.

Key Characters : Colonies massive or derived from massive; Budding extratentacular; Corallites small (4 mm diameter); Corallites crowded ....Genus *Cyphastera.*

72. ***Cyphastrea japonica*** Yana and Sugiyama, 1932, Fig. 72

Synonym

Cyphastrea tanabensis Yabe & Sugiyama, 1936

Taxonomic reference

Veron, J.E.N. 1992. Hermatypic corals of Japan. *Australian Inst. mar. Sci. monogr. Ser.*, **IX** : 86 pp.

Description : Colonies are encrusting, with an irregular surface. Corallites are small and arranged tightly. Septa are in two unequal orders of 12 each arranged alternatively, the first being exsert and irregularly toothed. Coenosteum spinules are prominent. Groove and tubercle formations are often present.

Colour : Colonies are thick green and yellowish green, sometimes pink in colour

Key Characters : Colony massive; 12 primary septa; Costae equal to sub equal; Septa irregularly exsert; Corallites crowded; Coenosteum mostly smooth ..... *Cyphastera japonica.*

Fig. 72. *Cyphastrea japonica* Yana and Sugiyama, 1932

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution : Australia, Indonesia, Japan, Malaysia, New Caledonia, Papua New Guinea, Philippines, Solomon Islands and Viet Nam.

IUCN Red List Category and Criteria : No entries found.

73. ***Cyphastrea ocellina*** (Dana, 1864), Fig. 73

Synonym

Astrea ocellina Dana, 1846

Taxonomic reference

Wijsman-Best, M. 1980. Indo-Pacific coral species belonging to the subfamily Montastreinae Vaughan and Wells, 1943 (Scleractinia, Coelenterata). Part 1 : The genera *Cyphastrea*, *Leptastrea*, *Echinophora* and *Diplostrea*. *Zool. Mededelingen*, **55** : 235-263.

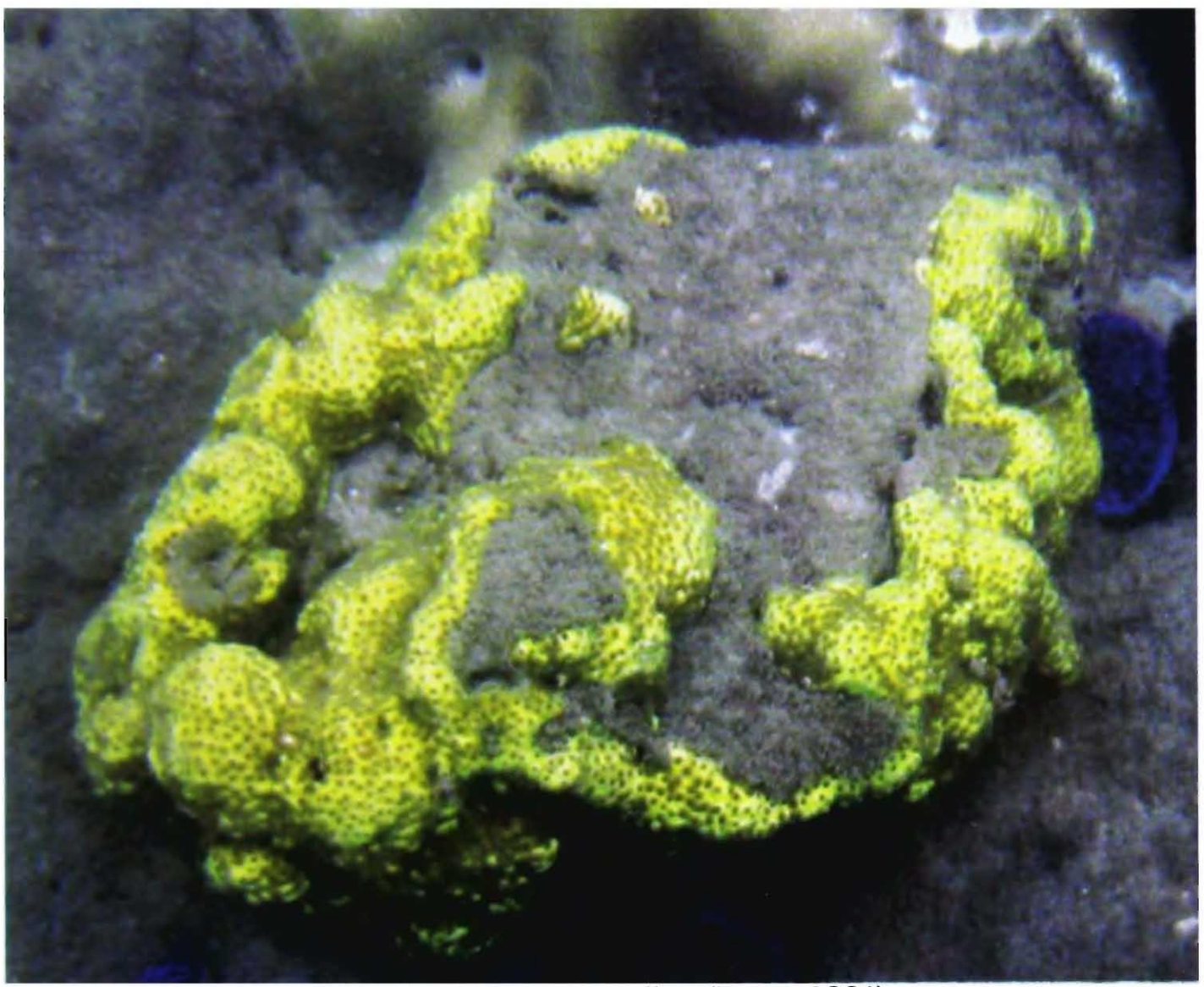


Fig. 73. *Cyphastera ocellina* (Dana, 1864)

Description : Colonies are massive or encrusting, with an undulating surface and tightly compacted. Septa are in two unequal orders of 12 each and sometimes have a third order. Paliform lobes are absent. The coenosteum is covered with short spinules.

Colour : Colonies are pale greenish-yellow or dark green.

Key Characters : Colony massive; 12 primary septa; Costae equal to sub equal; Septa irregularly exsert; Corallites crowded; Coenosteum spinules common ..... *Cyphastera ocellina.*

Place of Record : Pongibalu, South Andaman (Lat.-N-11° 31. 030'& Long. E- 92° 39.159').

Distribution : Australia, Indonesia, Irian Jaya, Japan, Marshall Islands, Papua New Guinea, Philippines, United States and United States Minor Outlying Islands : Johnston I.

IUCN Red List Category and Criteria : No entries found.

Genus ***Echinopora*** **Lamarck, 1816**

Taxonomic references

Chevalier, J.P. 1975. Les scleractiniaires de la Melannesie Francaise. II Expedition Francasie sur les recifs corralliens de la Nouvelle-Caledonie. *Singer-Polignac*, Paris, 407 pp.

Veron, J.E.N., Pichon, M. and Wijsman-Best, M. 1977. Scleractinian of Eastern Australia. Part 2. Families Faviidae, Trachyphylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **III** : 233 pp.

Wijsman-Best, M. 1980. Indo-Pacific coral species belonging to the subfamily Montastreinae Vaughan and Wells, 1943 (Scleractinia, Coelenterata). Part 1 : The genera *Cyphastrea, Leptastrea, Echinophora* and *Diplostrea. Zool. Mededelingen*, **55** : 235-263.

Description : Colonies are massive, arborescent or laminar or mixture of these forms. Corallites are placoid (except *E. fruticulosa and E. tiranensis*), with calices up to 10 milimetres diameter. Septa are exsert and irregular. Columellae are usually prominent. Costae are mostly restricted to the corallite wall. The coenosteum is granulated. Tentacles are extended only at night.

Key Characters : Colonies explanate to branching .... Genus *Echinopora.*

74. ***Echinopora fruticulosa*** (Ehrenberg, 1834), Fig. 74

Taxonomic references

Klunzinger, C.B. 1879. Die Korallthiere des Rothen Meeres. 2 : Die Steinkorallen. 2. Die Astraeaceen und Fungiaceen. Gutmann, Berlin

Sheppard, C.R.C. and Sheppard, A.L.S. 1991. *Corals and coral communities of Arabia.* Fauna of Saudi Arabia, **12** : 170 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S. D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin,* **(459)** : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are irregular clumps of interlocking branches. Branches are formed of single tubular corallites (or axial corallites) with lateral buds. Corallites are large. Costal spines are widely spaced and not exsert.

Colour Colonies are pinkish brown and with pale corallite ends.

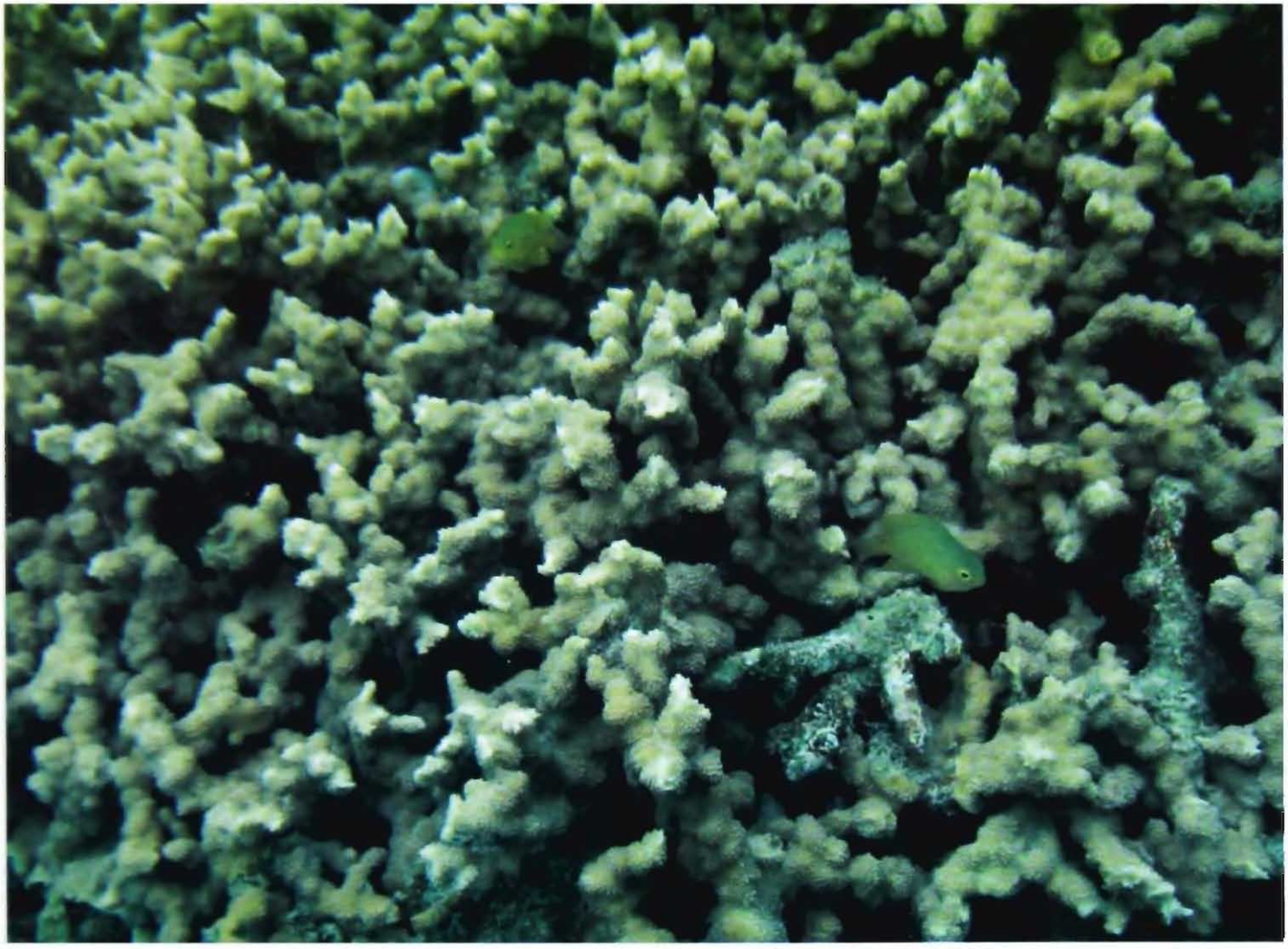


Fig. 74. *Echinopora fruticulosa* (Ehrenberg, 1834

Key Characters : Colonies not sub-massive; Colonies form solid branches; Coenosteum rough ..... *Echinopora fruticulosa.*

Place of Record : North Reef Island, North Andaman (Lat. N-12° 56. 084' & Long. E-92° 57.345') and Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution : Djibouti, Egypt, Jordan and Madagascar.

IUCN Red List Category and Criteria : Near Threatened.

Family PORITIDAE Grey, 1842

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V** : 210 pp.

Description : Colonial, zooxanthalate and mostly extant. Colnies are usually massive, laminar or branching. Corallites have a wide size range but are usually compacted, with little or no coenosteum. Walls and septa are porous.

Genus ***Porites*** Link, 1807

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V** : 210 pp.

Description : Colonies are flat, massive or branching. Massive colonies are spherical or hemispherical when small and helmet or dome shaped when large, and may be over 5 metres across. Corallites are small, immersed, and filled with septa. Tentaclcles of most but not all, species are extended only at night.

Key Characters : Corallites < 2 mm diameter; Septa fused in non-cyclical pattern .....Genus *Porites.*

75. ***Porites arnaudi*** Reyes-Bonilla & Carricart-Ganivet, 2000, Fig. 75

Taxonomic reference

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : colonies are flat plates which may be arranged as tiers or whorls. Corallites are compact and deeply excavated.

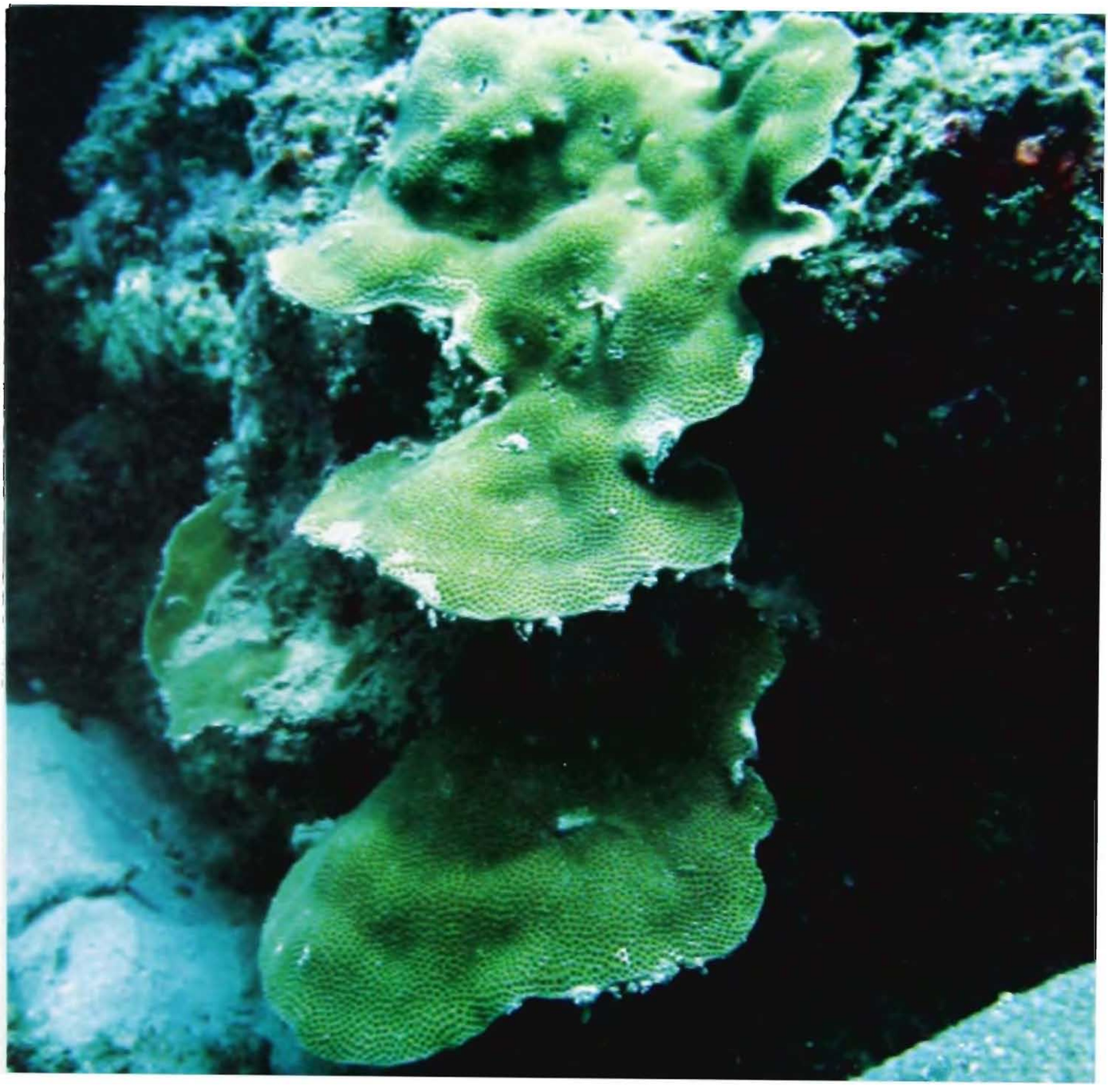


Fig. 75. *Porites arnaudi* Reyes-Bonilla & Carricart-Ganivet, 2000

Colour : Pale brown or greenish-grey, usually with pale margins to plates.

Key Characters : Colonies thick columns or thick plates; Colonies thick plates; Pali form well developed ..... *Porites arnaudi.*

Place of Record : Jolly Buoy Island, South Andaman (Lat. N-11° 30. 251' & Long. E-92° 32.591')

Distribution : French Polynesia, Kiribati and Mexico

IUCN Red List Category and Criteria : Least Concern.

76. ***Porites harrisoni*** Veron, 2000, Fig. 76

Taxonomic references

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **1** : 136

Description : Colonies are usually less than one metre across. They have a wide range of sub-massive, nodular, columnar and branching growth-forms on a broad encrusting base.

Colour : Dark brown.

Key Characters Colony branching; Corallites 1-1.8 mm. diameter; Corallites not deeply excavated; Walls not irregular; Columella conspicuous; Walls angular ..... *Porites harrisoni.*

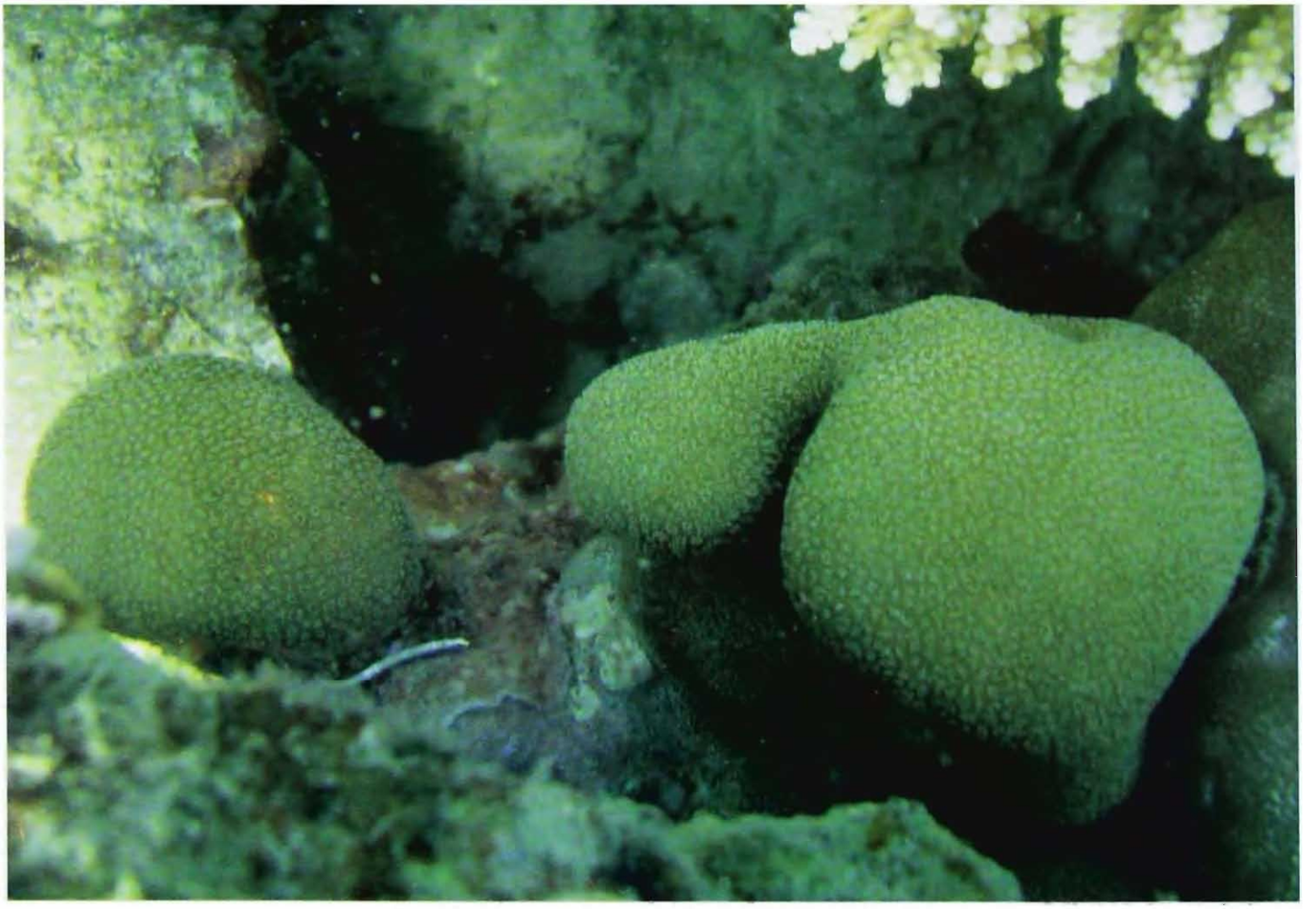


Fig. 76. *Porites harrisoni* Veron, 2000

Place of Record Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution Bahrain, Djibouti, Egypt, Iran (Islamic Republic of), Kuwait, Oman, Sudan and United Arab Emirates.

IUCN Red List Category and Criteria : Near Threatened.

77 ***Porites myrmidonensis*** Veron, 1985, Fig. 77

Taxonomic references

Veron, J.E.N. 1985. New scleractinian from Australian coral reefs. *Rec. Western Australian Mus.*, **12** : 147-183.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are massive and may be over 4 metres across. The surface is usually nodular Corallites are in deeply excavated pits and are distinctive underwater

Colour : Uniform or mottled green or brown.

Key Characters : Colonies massive; Corallites >1 mm diameter; Columella present; Triplet not fused; Pali conspicuous; Coenosteum not conspicuously granulated; Corallites deeply excavated ..... *Porites myrmidonensi.*

Place of Record : Pongibalu, South Andaman (Lat. N-11° 31. 030' & Long. E-92° 39.159').

Distribution Australia.

IUCN Red List Category and Criteria Least Concern.

Fig. 77. *Porites myrmidonensis* Veron, 1985

78. ***Porites porites*** (Pallas, 1766), Fig. 78

Taxonomic references

Pallas, P.S. 1766. Elenchus Zoophytorum. La Hague

Squires, D.F. 1958. Stony corals from the vicinity of Bimin, Bahamas British West indices. *Bull. American Mus. Nat. Hist.*, **115** : 215-262.

Roos, P.J. 1971. The shallow water stony corals of the Netherlands Antilles. *Studies on the Fauna of Curacio and other Caribbean Islands*, **130** : 108 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are sturdy fused branches with rounded tips. Corallites are deeply excavated and with a coarse coenosteum form a rough surface. Tentacles are usually extended during the day.

Fig. 78. *Porites porites* (Pallas, 1766)

Colour : Uniform grey-brown in colour.

Key Characters : Colony branching; Corallites >1.8 mm diameter Walls not inregular; Branches not closely compact ..... *Porites porites.*

Place of Record : Tarmugli Island, South Andaman (Lat. N-11°33.261' & Long. E- 092°32.591')

Distribution : Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cape Verde, Cayman Islands, Colombia, Cuba, Dominica, Dominican Republic, Guadeloupe, Honduras, Jamaica, Martinique, Mexico, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, Saint Lucia, Turks and Caicos Islands, United States of America, United States Virgin Islands and Venezuela (Bolivarian Republic).

IUCN Red List Category and Criteria : Least Concern.

Genus ***Goniopora*** de Blainville, 1830

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V** : 210 pp.

Description : Colonies are usually branching, columnar or massive but may be encrusting. Corallites have thick but porous walls, and calices are filled with compacted septa and columallae. Polyps are long and fleshy and tentacles are normally extended day and night. Polyps have 24 tentacles. Different species have polyps of different shapes and colours, which allow them to be identified underwater.

Key Characters : Corallites >2 mm. diameter; Skeleton robust, not very porous ..... Genus *Goniopora.*

79. ***Goniopora norfolkensis*** Veron and Pichon, 1982, Fig. 79

Taxonomic references

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V** : 210pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin*, (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are hemispherical to encrusting. Calices have small columellae and long, regular, steeply plunging septa. Paliform lobes are absent.

Fig. 79. *Goniopora norfolkensis* Veron and Pichon, 1982

Colour : Colonies are usually greenish brown with distinctively coloured oral discs and pale tips to the tentacles.

Key Characters : Colonies not encrusting; Corallites 3-5 mm. diameter; Colony massive; Septal development uniform among corallites; Corallites excavated; Primary septa not distinctive ..... *Goniopora norfolkensis.*

Place of Record : Tarmugli Island, South Andaman (Lat. N-11°33.261' & Long. E- 092°32.591').

Distribution : Australia, China, Indonesia, Japan, Norfolk Island, Philippines and Viet Nam.

IUCN Red List Category and Criteria : Least Concern.

80. ***Goniopora pandoraenis*** Veron and Pichon, 1982, Fig. 80

Taxonomic references

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V**: 210 pp.

Description : Colonies consist of small branching columns, usually oval in transverse section. Corallites have thick walls and septa. Six thick paliform lobes form a crown.

Colour Colonies are dark grey-brown with white mouths and tentacle tips.

Fig. 80. *Goniopora pandoraenis* Veron and Pichon, 1982

Key Characters : Colonies not encrusting; Corallites 3-5 mm diameter; Colony branching or columner; Colonies branching; Branches elongate; Branches laterally compressed ..... *Goniopora pandoraenis.*

Place of Record : North Bay, South Andaman (Lat. N-11° 42. 068' & Long. E-92° 45.116)

Distribution : Coral Sea.

IUCN Red List Category and Criteria : No entries found.

Genus ***Alveopora*** de Blainville, 1830

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V** : 210 pp.

Description : Colonies are massive or branching, often with irregular shapes. The skeleton structure is light, consisting of interconnecting rods and spines. Corallites have lattice like walls and septa that are mostly composed of fine spines which may connect in the centre to form a columella tangle. Polys are large and fleshy and are normally extended day and night. They have 12 tentacles, often with swollen knob-like tips.

Key Characters : Corallites >2 mm. diameter; Skeleton delicate, very porous ..... Genus *Alveopora.*

81. ***Alveopora catalai*** Wells, 1968, Fig. 81

Taxonomic references

Wells, J.W. 1968. Notes on Indo-Pacific scleractinian corals, part 5: a new species of *Alveopora* from New Caledonia; part 6 : further note on *Bantamia merleti* Wells. *Pacific Science,* **22** : 274-276.

Veron, J.E.N. and Pichon, M. 1982. Scleractinian of Eastern Australia. Part 4, Family Poritidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **V** : 210 pp.

Cairns, S.D., Hoeksema, B.W. and van der Land, J. 1999. List of extant stony corals. Appendix (pp. 13-46) in S.D. Cairns, Species richness of Recent Scleractinia. *Atoll Research Bulletin,* (**459**) : 46 pp.

Veron, J.E.N. 2000. Corals of the world. **3** vols. *Australian Institute of Marine Science and CRR Qld. Pty. Ltd.*

Description : Colonies are composed of gnarled that divide irregularly. Corallites are large, composed of an interlocking network of rods and spines. Polyps are large with knob-like tentacle tips.

Fig. 81. *Alveopora catalai* Wells, 1968

Colour Pale brown with white columella.

Key Characters : Colonies branching or branching columns; Corallites without a palisade of exsert spines; Septa in comb rows.... *Alveopora catalai.*

Place of Record : Havelock Island, Ritchie's Archipelago (Lat. N-12° 00. 005' & Long. E-92° 56.808').

Distribution : Australia, Indonesia, Japan, Malaysia, New Caledonia, Papua New Guinea, Philippines, Vanuatu and Viet Nam.

IUCN Red List Category and Criteria : Near Threatened.

Family OCULINIDAE Oken, 1815

Taxonomic reference

Wells, J.W. 1956. Scleractinia. In : Moore, R.C. (ed.) Treatise on invertebrate palaeontology. *Geol. Soc. America and Univ. Kansas Press*, **F** : 328-440.

Description : Colonial, with both zooxanthalate and azooxanthalate species. Corallites are solid walled tubes linked together by smooth solid coenosteum. Septa are very exsert. Columellae are usually weakly developed. Paliform lobes may form a distinct crown.

Genus ***Galaxea*** Oken, 1815

Taxonomic reference

Veron, J.E.N. and Pichon, M. 1980. Scleractinia of Eastern Australia. Part 3, Families Agariciidae, Siderasteridae, Fungiidae, Oculinidae, Merulinidae, Mussidae, Pectiniidae, Caryophylliidae, Dendrophylliidae. *Australian Inst. Mar. Sci. Monogr. Ser.*, **IV** : 471 pp.

Description : Colonies are massive, columnar, encrusting, cushion-shaped or irregular. Corallites are cylindrical, thin walled and separated by a blistery coenosteum. Columellae are weak or absent. Septa are exsert.

Key Characters : Septa >2 mm exsert ..... Genus *Galaxea.*

82. ***Galaxea cryptoramosa*** Fenner and Veron, 2000, Fig. 82

Taxonomic reference

Veron, J.E.N. 2000. Corals of the World. *Australian Inst. Mar. Sci. and CRR Qld. Pty. Ltd.*, **2** :114.

Fig. 82. *Galaxea cryptoramosa* Fenner and Veron, 2000

Description : Colonies are upto 30 cm across and consist of irregular branches composed of irregularly fused corallites which vary in size. Larger corallites have three cycles of septa. Primary septa almost reach the corallites centre where they plunge vertically, third cycle septa are short. Septa are not as exsert as in other *Galaxea* species. There is no columella. Two subequal cycles of costae extend down the outer wall of the corallites, becoming submerged in the coenosteum. The surface of main branches is composed of smooth coenosteum. Tentacles are extended day and night.

Colour : Brown to yellow.

Key Characters : Colonies branching; Branches lobed or truncated; Septa not very exsert ..... *Galaxea cryptoramosa.*

Place of Record : Neil Island, Ritchie's Archipelago (Lat. N-11°50.826' & Long. E-093°00.554').

Distribution : Australia, Indonesia, Malaysia, Philippines, Singapore and Thailand.

IUCN Red List Category and Criteria : Vulnerable

CHECKLIST OF SCLERACTINIAN CORALS OF ANDAMAN AND NICOBAR ISLANDS

Family **ACROPORIDAE** Verrill, 1902

Genus ***Acropora*** Oken, 1815

1. *Acropora austera* (Dana, 1846)
2. *Acropora abrotanoides* (Lamarck, 1816)
3. *Acropora anthocersis* (Brook, 1893)
4. *Acropora awi* Wallace and Wolstenholme, 1998
5. *Acropora cerealis* (Dana, 1846)
6. *Acropora chesterfieldensis* Veron and Wallace, 1984
7 *Acropora copiosa* Nemenzo, 1967
8. *Acropora aspera* (Dana, 1846)
9. *Acropora cophodactyla* (Brook, 1892)
10. *Acropora cytherea* (Dana, 1846)
11. *Acropora efflorescens* (Dana, 1846)
12. *Acropora elseyi* (Brook, 1892)
13. *Acropora exquisita* Nemenzo, 1971
14. *Acropora fastigata* Nemenzo, 1967
15. *Acropora forskali* (Ehrenberg, 1834)
16. *Acropora formosa* (Dana, 1846)
17 *Acropora inermis* (Brook, 1891)
18. *Acropora plantaginea* (Lamark, 1816)
19. *Acropora granulosa* (MED & H., 1860)
20. *Acropora globiceps* (Dana, 1846)
21. *Acropora hemprichii* (Ehrenberg, 1834)
22. *Acropora haimei* (Milne Edwards & Haime, 1860)
23. *Acropora hoeksemai* Wallace, 1997
24. *Acropora horrida* (Dana, 1836)
25. *Acropora humilis* (Dana, 1846)
26. *Acropora hyacinthus* (Dana, 1846)

27 *Acropora insignis* Nemenzo, 1967
28. *Acropora intermedia* (Wallace, 1999)
29. *Acropora kosurini* Wallace, 1994
30. *Acropora kimbeensis* Wallace, 1999
31. *Acropora latistella* (Brook, 1891)
32. *Acropora loisetteae* Wallace, 1994
33. *Acropora loripes* (Brook, 1892)
34. *Acropora longicyathus* (MED & H., 1860)
35. *Acropora lutkeni* Crossland, 1952
36. *Acropora mirabilis* (Quelch,1886)
37 *Acropora millepora* (Ehrenberg, 1834)
38. *Acropora monticulosa* (Bruggemann, 1879)
39. *Acropora microclados* (Ehrenberg, 1834)
40. *Acropora microphthalma* (Verrill, 1859)
41. *Acropora muricata* (Linnaeus, 1758)
42. *Acropora nasuta* (Dana, 1846)
43. *Acropora proximalis* Veron, 2000
44. *Acropora nana* (Studer, 1878)
45. *Acropora nobilis* (Dana, 1846)
46. *Acropora ocellata* (Bernard, 1896)
47 *Acropora paniculata* Verrill, 1902
48. *Acropora palmarae* Wells, 1954
49. *Acropora papillare* Latypov, 1992
50. *Acropora palifera* (Lamarck, 1816)
51. *Acropora pulchra* (Brook, 1891)
52. *Acropora polystoma* (Brook, 1891)
53. *Acropora pharaonis* (Milne Edwards and Haime, 1860)
54. *Acropora rudis* (Rehberg, 1892)
55. *Acropora robusta* (Dana, 1846)
56. *Acropora roseni* Wallace, 1999

57 *Acropora selago* (Studer, 1878)
58. *Acropora speciosa* (Quelch, 1886)
59. *Acropora natalensis* (Riegl, 1995)
60. *Acropora squarrosa* (Ehrenberg, 1834)
61. *Acropora striata* (Verrill, 1866)
62. *Acropora tutuilensis* (Hoffmeister, 1925)
63. *Acropora subglabra* (Brook, 1891)
64. *Acropora wallaceae* (Veron, 1990)
65. *Acropora torresiana* Veron, 2002
66. *Acropora valenciennesi* (Milne Edwards & Haime, 1860)
67 *Acropora tanegashimensis* (Veron, 1990)
68. *Acropora variolosa* (Klunzinger, 1879)
69. *Acropora vaughani* Wells, 1954
70. *Acropora verweyi* (Veron and Wallace, 1984)
71. *Acropora aspera* (Dana, 1846)
72. *Acropora plana* (Nemanzo, 1967)
73. *Acropora brueggemanni* (Brook, 1893)
74. *Acropora clathrata* (Brook, 1891)
75. *Acropora caroliniana* Namenzo, 1976
76. *Acropora multiacuta* (Nemenzo, 1967)
77 *Acropora carduus* (Dana, 1846)
78. *Acropora digitifera* (Dana, 1846)
79. *Acropora divaricata* (Dana, 1846)
80. *Acropora echinata* (Dana, 1846)
81. *Acropora pinguis* (Wells, 1950)
82. *Acropora florida* (Dana, 1846)
83. *Acropora yongei* (Veron & Wallace, 1984)
84. *Acropora solitaryensis* Veron and Wallace, 1984
85. *Acropora secale* (Studer, 1878)
86. *Acropora schmitti* (Wells, 1950)

87 *Acropora gomezi* (Veron, 2000)

88. *Acropora massawensis* (Marenzelles, 1906)

89. *Acropora clathrata* (Brook, 1892)

90. *Acropora desatwii* (Wallace, 1994)

91. *Acropora samoensis* (Brook, 1891)

92. *Acrpora spicifera* (Dana, 1846)

93. *Acropora torresiana* (Veron, 2000)

94. *Acropora glauca* (Brook, 1893)

95. *Acropora gemmifera* (Brook, 1892)

96. *Acropora dendrum* (Bassett-Smith, 1890)

97 *Acropora grandis* (Brook, 1892)

98. *Acropora teres* (Verrill, 1866)

99. *Acropora subulata* (Dana, 1846)

100. *Acropora papillare* (Latypov, 1992)

101. *Acropora tenuis* (Dana, 1846)

102. *Acropora palmerae* (Wells, 1954)

103. *Acropora valida* (Dana, 1846)

Genus ***Astreopora*** de Blainville, 1830

104. *Astreopora gracilis* Bernard, 1896

105. *Astreopora listeri* Bernard, 1896

106. *Astreopora myriophthalma* (Lamarck, 1816)

107 *Astreopora suggesta* Wells,1954

108. *Astreopora cucullata* Lamberts, 1980

109. *Astreopora randalli* Lamberts, 1980

Genus ***Montipora*** de Blainville, 1830

110. *Montipora aequituberculata* Barnard, 1897

111. *Montipora angulata* (Lamarck, 1816)

112. *Montipora caliculata* (Dana, 1846)

113. *Montipora capitata* Dana, 1846

114. *Montipora cebuensis* (Nemenzo, 1976)

115. *Montipora danae* (Lamarck, 1816)
116. *Montipora delicatula* (Veron, 2000)
117 *Montipora digitata* (Dana, 1846)
118. *Montipora edwardsi* Bernard, 1897
119. *Montipora explanata* Brueggenman, 1879
120. *Montipora exserta* Quelch, 1886
121. *Montipora foveolata* (Dana, 1846)
122. *Montipora foliosa* (Pallas, 1766)
123. *Montipora hemispherica* (Veron, 2000)
124. *Montipora hispida* (Dana, 1846)
125. *Montipora informis* Bernard, 1897
126. *Montipora grisea* (Bernard, 1897)
127 *Montipora jonesi* Pillai, 1969
128. *Montipora manauliensis* Pillai, 1967
129. *Montipora meandrina*(Ehrenberg, 1834)
130. *Montipora monasteriata* (Forskal, 1775)
131. *Montipora millepora* Crossland, 1952
132. *Montipora peltiformis* Benard, 1897
133. *Montipora spumosa* (Lamarck, 1816)
134. *Montipora spongiosa* (Ehrenberg, 1834)
135. *Montipora turgescens* Bernard, 1897
136. *Montipora tuberculosa* Lamarck, 1816
137 *Montipora venosa* (Ehrenberg, 1834)
138. *Montipora verrucosa* (Lamarck, 1816)
139. *Montipora verrilli* Vaughan, 1907
140. *Montipora undata* Bernard, 1897
141. *Montipora mollis*(Bernard, 1897)
142. *Montipora vietnamensis* Veron, 2000
143. *Montipora palawanensis* Veron, 2002
144. *Montipora verruculosus* Veron

Family AGARICIIDAE Gray, 1847

Genus ***Coeloseris*** Vaughan, 1918

145. *Coeloseris mayeri* Vaughan, 1918

Genus ***Gardineroseris*** Scheer & Pillai, 1974

146. *Gardineroseris.plannulata* (Dana, 1846)

Genus ***Leptoseris*** MED & H,1849

147 *Leptoseris explanata* Yabe & Sugiyama, 1941

148. *Leptoseris cucllata* (Ellis & Solander, 1786)

149. *Leptoseris hawaiensis* Vaughan, 1907

150. *Leptoseris incrustans* (Quelch,1886)

151. *Leptoseris mycetoseoides* Wells, 1954

152. *Leptoseris papyracea* (Dana, 1846)

153. *Leptoseris scabra* Vaughan, 1907

154. *Leptoseris yabei* (Pillai & Scheer, 1976)

Genus ***Pachyseris*** MED & H., 1849

155. *Pachyseris gemmae* Nemenzo, 1955

156. *Pachyseris foliosa* Veron, 1990

157 *Pachyseris rugosa* (Lamarck, 1801)

158. *Pachyseris speciosa* (Dana, 1846)

Genus ***Pavona*** Lamarck, 1801

159. *Pavona bipartite* Nemenzo, 1980

160. *Pavona cactus* (Forskal, 1775)

161. *Pavona calvus* (Dana, 1846)

162. *Pavona danai* (Milne Edwards & Haime, 1860)

163. *Pavona decussarata* (Dana, 1846)

164. *Pavona duerdeni* Vaughan, 1907

165. *Pavona explanulata* (Lamarck, 1816)

166. *Pavona rugosa* (Lamarck, 1801)

167 *Pavona gigantean* Verrill, 1896

168. *Pavona maldivensis* (Gardiner, 1905)

169. *Pavona minuta* Wells, 1954

170. *Pavona varians* Verrill, 1846
171. *Pavona venosa* (Ehrenberg, 1834)
172. *Pavona* sp. "duerdeni-like"

Family ASTROCOENIIDAE Koby, 1890

Genus ***Madracis*** MED & H., 1849

173. *Madracis kirbyi* Veron & Pichon, 1976

Genus ***Stylocoeniella*** Yabe & Sugiyama, 1935

174. *Styloceniella armata* (Ehrenberg, 1834)
175. *Styloceniella guentheri* Basset Smith 1890

Family DENROPHYLLIIDAE Gray, 1847

Genus ***Dendrophyllia***

176. *Dendrophyllia robusta* (Bourne,1905)

Genus ***Tubastrea*** Lesson, 1829

177 *Tubastrea diaphana* Dana, 1846
178. *Tubastrea coccinia* Lesson, 1829
179. *Tubastrea mesenterina* (Lamarck, 1816)
180. *Tubastrea faulkneri* Wells, 1892
181. *Tubastrea micranthus* Ehrenberg, 1834
182. *Tubastrea peltata* (Esper, 1794)
183. *Tubastrea reniformis* Bernard, 1896

Family EUPHYLLIDAE Veron, 2000

Genus ***Euphyllia*** Dana, 1846

184. *Euphyllia ancora* Veron & Pichon, 1979
185. *Euphyllia divisa* Veron & Pichon, 1979
186. *Euphyllia glabrescens* (Chamisso & Eyscenhardt, 1821)
187 *Euphyllia yaeyamaenisis* (Sirai, 1980)

Genus ***Physogyra*** Quelch, 1884

188. *Physogyra lichtensteini* (MED & H., 1851)

Genus ***Plerogyra*** Milne-Edwards and Haime, 1848

189. *Plerogyra sinuosa* (Dana, 1846)

Family FAVIIDAE Gregory, 1900

Genus ***Barabattoia*** Yabe and Sugiyama, 1941

190. *Barabattoia amicorum* (Milne Edwards & Haime, 1850)

191. *Barabattoi laddi* (Wells, 1954)

Genus ***Cyphastrea*** MED & H., 1848

192. *Cyphastera japonica* Yabe and Sugiyama, 1932
193. *Cyphastera microphthalma* (Lamarck, 1816)
194. *Cyphastera ocellina* (Dana, 1864)
195. *Cyphastera serailia* (Forskal, 1775)

Genus ***Diploastrea*** Matthai, 1914

196. *Diploastrea helipora* (Lamarck, 1816)

Genus ***Diploria*** MED & H., 1848

197 *Diploria strigosa* (Dana, 1848)

Genus ***Echinopora*** Lamarck, 1816

198. *Echniopora fruticulosa* (Ehrenberg, 1834)
199. *Echniopora gemmacea* Lamarck, 1816
200. *Echniopora horrida* Dana, 1846
201. *Echniopora lamellosa* (Esper, 1795)

Genus ***Favia*** Oken, 1815

202. *Favia favus* (Forskal, 1775)
203. *Favia albidus* Veron 2000
204. *Favia helianthoides* Wells, 1954
205. *Favia lacuna* Veron,Turak and DeVantier, 2000
206. *Favia laxa* (Klunzinger, 1879)
207 *Favia matthaii* Vaughan, 1918
208. *Favia danae* Verrill, 1872
209. *Favia maxima* Veron and Pichon, 1977
210. *Favia lizardensis* Veron and Pichon, 1977
211. *Favia pallida* (Dana, 1846)
212. *Favia maritima* (Nemenzo, 1971)
213. *Favia rotundata* (Veron & Pichon, 1977)
214. *Favia rotumana* (Gardiner, 1899)
215. *Favia speciosa* Dana, 1846
216. *Favia stelligera* (Dana, 1846)

217 *Favia truncatus* Veron, 2000

218. *Favia veroni* (Moll & Borel-Best, 1984)

Genus ***Favites*** Link, 1807

219. *Favites abdita* (Ellis & Solander, 1786)

220. *Favites bestae* (Veron, 2000)

221. *Favites acuticollis* (Ortmann, 1889)

222. *Favites complanata* (Ehrenberg, 1834)

223. *Favites flexuosa* (Dana, 1846)

224. *Favites halicora* (Ehrenberg, 1834)

225. *Favites micropentagona* Veron, 2000

226. *Favites spinosa* (Klunzinger, 1879)

227 *Favites chinensis* (Verrill, 1866)

228. *Favites russelli* (Wells, 1954)

229. *Favites complanata* (Ehrenberg, 1834)

230. *Favites paraflexuosa* Veron, 2000

231. *Favites pentagona* (Esper, 1794)

232. *Favites vasta* (Klunzinger, 1879)

Genus ***Goniastrea*** MED & H., 1848

233. *Goniastrea aspera* Verrill, 1905

234. *Goniastrea australensis* (MED & H., 1857)

235. *Goniastrea edwardsi* Chevalier, 1971

236. *Goniastrea minuta* Veron, 2000

237 *Goniastrea peresi* (Faure and Pichon, 1978)

238. *Goniastrea favulus* (Dana,1846)

239. *Goniastrea pectinata* (Ehrenberg, 1834)

240. *Goniastrea retiformis* (Lamarck, 1816)

Genus ***Leptoria*** MED & H., 1848

241. *Leptoria irregularis* Veron, 1990

242. *Leptoria phrygia* (Ellis & Solander, 1786)

Genus ***Leptastrea*** MED & H., 1848

243. *Leptastrea bottae* (MED & H., 1849)

244. *Leptastrea aequalis* Veron, 2000
245. *Leptastrea purpurea* (Dana, 1846)
246. *Leptastrea transversa* Klunzinger, 1879

Genus ***Montastrea*** de Blainville, 1830

247 *Montastrea annuligera* (MED & H., 1849)
248. *Montastrea colemani* Veron, 2000
249. *Montastrea curta* (Dana, 1846)
250. *Montastrea halicora* (Ehrenberg, 1834)
251. *Montastrea salebrosa* (Nemenzo, 1959)
252. *Montastrea valenciennesi* (MED & H., 1848)

Genus ***Oulophyllia*** MED & H., 1848

253. *Oulophyllia bennettae* (Veron and Pichon, 1977)
254. *Oulophyllia crispa* (Lamarck, 1816)
255. *Oulophyllia levis* (Nememnzo, 1959)

Genus ***Oulastrea*** MED & H., 1848

256. *Oulastrea crispata* (Lamarck, 1816)

Genus ***Solenastrea*** MED & H., 1848

257 *Solenastrea bournoni* MED & H., 1849

Genus ***Platygyra*** Ehrenberg, 1834

258. *Platygyra acuta* Veron, 2000
259. *Platygyra crosslandi* Matthai, 1928
260. *Platygyra daedalea* (Ellis & Solander, 1786)
261. *Platygyra lamellina* (Ehrenberg, 1834)
262. *Platygyra pini* Chevalier, 1975
263. *Platygyra ryukyuensis* Yabe & Sugiyama, 1936
264. *Platygyra carnosus* Veron, 2000
265. *Platygyra sinusa* (Dana, 1846)
266. *Platygyra sinensis* (MED & H., 1849)
267 *Platygyra verweyi* Wijsman-Best, 1976

Genus ***Plesiastrea*** MED & H., 1848

268. *Plesiastrea versipora* (Lamarck, 1816)

Family FUNGIIDAE Dana, 1846

Genus ***Cycloseris*** MED & H, 1849

269. *Cycloseris cyclolites* (Lamarck, 1801)
270. *Cycloseris curvata* (Hoeksema, 1989)
271. *Cycloseris costulata* (Ortmann, 1889)
272. *Cycloseris erosa* (Doderlain, 1901)
273. *Cycloseris hexagonalis* MED & H., 1848
274. *Cycloseris patelliformis* (Boschma, 1923)
275. *Cycloseris sinensis* MED & H., 1849
276. *Cycloseris somervillei* (Gardiner, 1909)
277 *Cycloseris tenuis*(Dana, 1846)

Genus ***Ctenactis*** Verrill, 1864

278. *Ctenactis crassa* (Dana, 1846)
279. *Ctenactis albitentanculata* Hoeksema, 1989
280. *Ctenactis echinata* (Pallas, 1766)

Genus ***Diaseris*** MED & H., 1849

281. *Diaseris distorta* (Michelin, 1843)
282. *Diaseris fragilis* (Alcock, 1893)

Genus ***Fungia*** Lamarck, 1801

283. *Fungia concinna* Verrill, 1864
284. *Fungia corona* Doderlein, 1901
285. *Fungia danai* MED & H., 1851
286. *Fungia fralinae* Nemenzo, 1955
287 *Fungia fungites* (Linnaeus, 1758)
288. *Fungia granulosa* Klunzinger, 1879
289. *Fungia horrida* Dana, 1846
290. *Fungia klunzingeri* Doderlein, 1901
291. *Fungia moluccensis* Horst, 1919
292. *Fungia paumotensis* Stutchbury, 1833
293. *Fungia repanda* Dana, 1846
294. *Fungia scutaria* Lamarck, 1801

295. *Fungia scruposa* (Klunzinger, 1879)
296. *Fungia scabra* (Doderlein, 1901)
297 *Fungia seychellensisi* Hoeksema, 1993
298. *Fungia taiwanensis* Hoeksema and Dai, 1991

Genus ***Halomitra*** Dana, 1846

299. *Halomitra pileus* (Linnaeus, 1758)

Genus ***Cantharellus*** Höksema and Best, 1984

300. *Cantharellus noumae* Höksema and Best, 1984
301. *Cantharellus jebbi* (Hoeksema, 1993)

Genus ***Herpolitha*** Eschscholtz, 1825

302. *Herpolitha limax* (Houttuyn, 1772)
303. *Herpolitha weberi* Horst, 1921

Genus ***Lithophyllon*** Rehberg, 1892

304. *Lithophyllon lobata* (Horst, 1921)
305. *Lithophyllon lobatum* M. Lemonie, 1929
306. *Lithophyllon undulatum* Rehberg, 1892

Genus ***Podabacia*** MED & H., 1849

307 *Podabacia crustacea* (Pallas, 1766)
308. *Podabacia sinai* Veron, 2000
309. *Podabacia lanakensis* Veron, 2000

Genus ***Polyphyllia*** Quoy & Gaimard, 1833

310. *Polyphyllia talpina* (Lamarck, 1801)

Genus ***Sandalolitha*** Quelch, 1884

311. *Sandalolitha dentata* Quelch, 1884
312. *Sandalolitha robusta* (Quelch, 1886)

Family MERULINÍDAE Verrill, 1866

Genus ***Hydnophora*** Fischer de Waldheim, 1807

313. *Hydnophora exesa* (Pallas, 1766)
314. *Hydnophora grandis* Gardiner, 1904
315. *Hydnophora microconos* (Lamarck, 1816)
316. *Hydnophora pilosa* (Veron, 1985)

317 *Hydnophora rigida* (Dana, 1846)

Genus ***Merulina*** Ehrenberg, 1834

318. *Merulina ampliata* (Ellis & Solander, 1786)

319. *Merulina scabricula* Dana, 1846

Genus ***Scapophyllia*** MED & H., 1848

320. *Scapophyllia cylindrica* MED & H., 1848

Family MUSSIDAE Ortmann, 1890

Genus ***Acanthastrea*** MED & H., 1848

321. *Acanthastrea echinata* (Dana, 1846)

322. *Acanthastrea hemprichii* (Ehrenberg, 1834)

323. *Acanthastrea hillae* Wells, 1955

324. *Acanthastrea ishigakiensis* Veron, 1990

Genus ***Cynarina*** Bruggemann, 1877

325. *Cynarina lacrymalis* (MED & H., 1848)

Genus ***Lobophyllia*** de Blainville, 1830

326. *Lobophyllia corymbosa* (Forskal, 1775)

327 *Lobophyllia hemprichii* (Ehrenberg, 1834)

328. *Lobophyllia hataii* Yabe and Sugiyama, 1936

329. *Lobophyllia robusta* Yabe and Sugiyama,1936

330. *Lobophyllia serratus* Veron, 2000

Genus ***Symphyllia*** MED & H., 1848

331. *Symphyllia agaricia* MED & H., 1849

332. *Symphyllia hassi* Pillai and Scheer, 1976

333. *Symphyllia erythraea* (Klunzinger, 1879)

334. *Symphyllia cylindrica* MED & H., 1849

335. *Symphyllia radians* MED & H., 1849

336. *Symphyllia recta* (Dana, 1846)

337 *Symphyllia valenciennesii* Milne Edwards & Haime, 1849

Family OCULINIDAE Gray, 1847

Genus ***Galaxea*** Oken, 1815

338. *Galaxea acrhelia* Veron, 2000

339. *Galaxea cryptoramosa* Veron, 2000
340. *Galaxea astreata* (Lamarck, 1816)
341. *Galaxea fascicularis* (Linnaeus, 1767)

Family PECTINIIDAE Vaughan & Wells, 1943

342. Genus ***Echinophyllia*** Klunzinger, 1879
343. *Echinophyllia aspera* (Ellis & Solander, 1786)
344. *Echinophyllia echinata*(Saville-Kent, 1871)
345. *Echynophyllia echinoporoides* Veron & Pichon, 1979

Genus ***Mycedium*** Oken, 1815

346. *Mycedium elephantotus*(Pallas, 1766)
347 *Mycedium robokaki*, Moll and Borel-Best, 1984

Genus ***Oxypora*** Saville Kent, 1871

348. *Oxypora crassispinosa* Nemenzo, 1979
349. *Oxypora lacera* (Verrill, 1864)

Genus ***Pectinia*** Oken, 1815

350. *Pectinia alcicornis* (Saville-Kent, 1871)
351. *Pectinia lactuca* Pallas, 1766
352. *Pectinia paeonia* (Dana, 1846)
353. *Pectinia teres* Nemenzo, 1981

Family PORITIDAE Gray, 1842

Genus ***Alveopora*** de Blainville, 1830

354. *Alveopora superficialis* Pillai & Scheer, 1976
355. *Alveopora verrilliana* Dana, 1846

Genus ***Goniopora*** de Blainville, 1830

356. *Goniopora columna* Dana, 1846
357 *Goniopora burgosi* (Nemenzo, 1955)
358. *Goniopora lobata* Milne Edwards and Haime, 1860
359. *Goniopora minor* Crossland, 1952
360. *Goniopora norfolkensis* Veron and Pichon, 1982
361. *Goniopora pendulus* (Veron, 1985)
362. *Goniopora planulata* (Ehrenberg, 1834)

363. *Goniopora stutchburyi* Wells, 1955
364. *Goniopora stokesi* MED & H., 1851
365. *Goniopora tenuidens* (Quelch, 1886)

Genus ***Porites*** Link, 1807

366. *Porites annae* Crossland, 1952
367 *Porites arnaudi* Reyes-Bonilla & Carricart-Ganivet, 2000
368. *Porites attenuata* (Nemenzo, 1955)
369. *Porites compressa* Dana, 1846
370. *Porites cylindrica* Dana, 1846
371. *Porites desilveri* Veron, 2000
372. *Porites eridani* Umbgrove, 1940
373. *Porites evermanni* Vaughan, 1907
374. *Porites exserta* Pillai, 1969
375. *Porites harrisoni* Veron, 2000
376. *Porites heronensis* (Veron, 1985)
377 *Porites sillimaniana* (Nemenzo, 1976)
378. *Porites latistella* Quelch, 1886
379. *Porites lutea* MED & H., 1860
380. *Porites horizontalata* (Hoffmeister, 1925)
381. *Porites lobata* Dana, 1846
382. *Porites lichen* Dana, 1846
383. *Porites mannarensis* Pillai, 1969
384. *Porites minicoensis* Pillai, 1969
385. *Porites murrayensis* Vaughan, 1918
386. *Porites monticulosa* Dana, 1846
387 *Porites myrmidoensis* Veron, 1885
388. *Porites nigrescens* Dana, 1846
389. *Porites rus* (Forskal, 1775)
390. *Porites solida* (Forskal, 1775)
391. *Porites vaughani* Crossland, 1952

Family POCILLOPORIDAE Gray, 1842

Genus ***Pocillopora*** Lamarck, 1816

392. *Pocillopora ankeli* Scheer & Pillai, 1974
393. *Pocillopora damicornis* Linnaeus, 1758
394. *Pocillopora danae* Verrill, 1864
395. *Pocillopora eydouxi* MED & H., 1860
396. *Pocillopora kelleheri* Veron, 2000
397 *Pocillopora ligulata* Dana, 1846
398. *Pocillopora meandrina* Dana, 1846
399. *Pocillopora verrucosa* (Ellis & Solander, 1786)

Genus ***Seriatopora*** Lamarck, 1816

400. *Seriatopora aculeate* (Quelch, 1886)
401. *Seriatopora caliendrum* Ehrenberg, 1834
402. *Seriatopora crassa* Quelch, 1886
403. *Seriatopora hystrix* Dana, 1846
404. *Seriatopora stellata* Quelch, 1886

Genus ***Stylophora*** Schweigger, 1819

405. *Stylopora pistillata* Esper, 1797

Family SIDERASTERIDAE Vaughan & Wells, 1943

Genus ***Coscinaracea*** MED & H., 1848

406. *Coscinaraea columna* (Dana, 1846)
407 *Coscinaraea crassa* Veron and Pichon,1980)
408. *Coscinaraea monile* (Forskal, 1775)

Genus ***Psammocora*** Dana, 1846

409. *Psammocora contigua* (Esper, 1797)
410. *Psammocora digitata* MED & H., 1851
411. *Psammocora explanulata* van der Horst, 1922
412. *Psammocora haimeana* MED & H., 1851
413. *Psammocora profundacella* Gardiner, 1898
414. *Psammocora superficialis* Gardiner, 1898

Genus ***Pseudosiderastrea*** Yabe & Sugiyama, 1953

415. *Pseudosiderastrea tayami* Yabe & Sugiyama, 1935

Genus ***Siderastrea*** de Blainville

416. *Siderastrea savignyyana* Milne Edwards & Haime, 1850

Family STYLASTERIDAE

Genus ***Distichopora*** (Ellis & Solander, 1788)

417 *Distichopora violacea* (Ellis & Solander, 1788)

Genus ***Stylaster***

418. *Stylaster* sp. 1 orange or pink

Family TRACHYPHYLLIIDAE

Genus ***Trachyphyllia*** MED & H., 1848

419. *Trachyphyllia geoffroyi* (Audouin, 1826)

REFERENCES

Alcock, A. 1902. A Naturalist in Indian seas or Five years with the Royal Indian Marine Survey Ship Investigator. John Murray, London, 328 pp.

Berntson, E.A., France, S.C. and Mullineaux, L.S. 1999. Phylogenetic relationships within the Class Anthozoa (Phylum Cnidaria) based on nuclear 18S rDNA sequences. *Molecular Phylogenetics and Evolution*, **13** : 417-433.

Bradbury, R.H., Reichelt, R.E., Meyer D.L and R.A. Birtles. 1886. Patterns in the distribution of the crinoid community at Davies Reef on the central Great Barrier Reef, *Coral Reefs*, **5** : 189-196.

Bridge, D., Cunningham, C.W., Schierwater, B., DeSalle, R. and Buss, L.W. 1992. Class-level relationships in the phylum Cnidaria: evidence from mitochondrial genome structure. *Proceedings of the National Academy of Sciences of the United States of America*, **89**(18) : 8750-8753.

Bridge, D., Cunningham, C.W., DeSalle, R. and Buss, L.W. 1995. Class-level relationships in the phylum Cnidaria : Molecular and morphological evidence. *Molecular Biology and Evolution*, **12**(4) : 679-689.

Brugler, M. 2004. *The complete mitochondrial DNA sequence of the black coral* Chrysopathes formosa *(Antipatharia) and six non-contiguous mitochondrial genes of the tube anemone* Ceriantheopsis americanus *(Ceriantharia) : implications for cnidarian phylogeny*. M.Sc. thesis, University of Charleston, South Carolina, 103 pp.

Birkeland, C. 1996. Life and Death of Coral Reefs. Published by International Thomson Publishing.

Cairns, S.D. 1984. An application of phylogenetic analysis to the Scleractinia : Family Fungiidae. *Palaeontographica Americana*, **54** : 49-57

Cairns, S.D. 1989. A revision of the ahermatypic Scleractinia of the Philippine Islands and adjacent Waters, Part-1 : Fungiacyathidae, Micrabaciidae, Turbinoliinae, Guyniidae, and Flabellidae. *Smithsonian Contributions to Zoology*, **486** : 1-136.

Cairns, S.D. 1997 A generic revision and phylogenetic analysis of the Turbinoliidae (Cnidaria : Scleractinia). *Smithsonian Contributions to Zoology*, **591** : 1-55.

Cairns, S.D. 2001. A generic revision and phylogenetic analysis of the Dendrophylliidae (Cnidaria : Scleractinia). *Smithsonian Contributions to Zoology*, **615** : 1-75.

Cavalier-Smith, T., Allsopp, M.T.E.P., Chao, E.E., Boury-Esnault, N. and Vacelet, J. 1996. Sponge phylogeny, animal monophyly, and the origin of the nervous system: 18S rRNA evidence. *Canadian Journal of Zoology*, **74** : 2031-2045.

Chen, C.A, Odorico, D.M., ten Lohuis, M.R., Veron, J.E.N. and Miller, D.J. 1995. Systematic relationships within the Anthozoa (Cnidaria: Anthozoa) using the 5'- end of the 28S rDNA. *Molecular Phylogenetics and Evolution*, **4** : 175-183.

Chen, C., Wallace, C.C., Yu J. and Wei, N. 2000. Strategies for amplification by polymerase chain reaction of the complete sequence of the gene encoding nuclear large subunit ribosomal RNA in corals. *Marine Biotechnology*, **2** : 558-570.

Chen, C.A., Wallace, C.C. and Wolstenholme, J.K. 2002. Analysis of the mitochondrial 12S rRNA gene supports a two clade hypothesis of the evolutionary history of scleractinian corals. *Molecular Phylogenetics and Evolution*, **23** : 137-149.

Collins, A.G. 1998. Evaluating multiple alternative hypotheses for the origin of Bilateria : An analysis of 18S rRNA molecular evidence. *Proceedings of the National Academy of Sciences of the United States of America*, **95** : 15458-15463.

Collins, A.G. 2002. Phylogeny of Medusozoa and the evolution of cnidarian life cycles. *Journal of Evolutionary Biology*, **15**(3) : 418-432.

Cuif, J.P., Lecointre, G., Perrin, C., Tillier, A. and Tillier, S. 2003. Patterns of septal biomineralization in Scleractinia compared with their 28S rRNA phylogeny : a dual approach for a new taxonomic framework. *Zoologica Scripta*, **32** : 459-473.

Daly, M., Fautin, D.G. and Cappola, V.A. 2003. Systematics of the Hexacorallia (Cnidaria : Anthozoa). *Zoological Journal of the Linnaean Society*, **139** : 419-437

Doumenc, D.A. and Van Praët, M. 1987 Ordre des Actiniaires, ordre des Ptyochodactiares, Ordre des Corallimorphares. *In* : Grassé, P.P. (Ed), *Traite de Zoologie*, Tome III, Fasicule 3, *Cnidaries Anthozoaires*. Masson, Paris, pp. 257-401.

Endean, R. & W. Stablum, 1973. A study of some aspects of the crown of thorns starfish (*A. planci*) infestations of reefs of Australia's Great Barrier Reef. *Atoll Res. Bul.*, **67** : 1-60.

Fukami, H., Omori, M. and Hatta, M. 2000. Phylogenetic relationships in the coral family Acroporidae, reassessed by inference from mitochondrial genes. *Zoological Sciences*, **17** : 689-696.

Fukami, H., Budd, A.F., Paulay, G., Sole-Cava, A.M., Chen, C.A., Iwao, K. and Knowlton, N. 2004. Conventional taxonomy obscures deep divergence betweenPacific and Atlantic corals. *Nature*, **427** : 832-835.

Jeyabaskaran, R. 1999. Report on Repaid Assessment of coral reefs of Andaman & Nicobar Islands. GOI/UNDP/GEF Project on Management of Coral Reef Ecosystem of Andaman & Nicobar Islands. Published by Zoological Survey of India, Port Blair, 110p.

Kerr, A.M, .2005. Molecular and morphological super tree of stony corals (Anthozoa : Scleractinia) using matrix representation parsimony. *Biological Reviews*, **80** : 1-16.

Kim, J.H., Kim, W. and Cunningham, C.W. 1999. A new perspective on lower metazoan relationships from 18S rDNA sequences. *Molecular Biology & Evolution*, **16** : 423-427

Le Goff-Vitry, M.C., Rogers, A.D. and Baglow, D 2004. A deep-sea slant on the molecular phylogeny of the Scleractinia. *Molecular Phylogenetics and Evolution*, **30** : 167-177

Mariscal R.N., Conklin, E.J.and Bigger, C.H. 1977 The ptychocyst, a major new category of cnida used in tube construction by a cerianthid anemone. *Biological Bulletin*, **152** : 392-405.

Medina, M., Collins, A.G., Silberman, J.D. and Sogin, M.L. 2001. Evaluating hypotheses of basal animal phylogeny using complete sequences of large and small subunit rRNA. *Proceedings of the National Academy of Sciences of the United States of America*, **98** : 9707-9712.

Milne Edwards, H. and Haime, J. 1857 *Histoire Naturelle des Coralliaires ou Polypes Proprement Dits, volumen 1*. Librairie Encyclopédique de Roret, Paris, 326 pp.

Medina, M., Collins, A.G., Takaoka, T.L., Kuehl, J.V and Boore, J.L. 2006. Naked corals: skeleton loss in Scleractinia. *Proceedings of the National Academy of Sciences of the United States of America*, **103** : 9096-9100.

Odorico, D.M. and Miller, D.J. 1997 Internal and external relationships of the Cnidaria : implications of primary and predicted secondary structure of the 5'-end of the 23S-like rDNA. *Proceedings of the Royal Society of London, series B*, **264** : 77-82.

Ogilvie, M.M. 1897 Korallen der Stramberger Schichten. *Palaeontographica, (Supplement)*, **2** : 73-282.

Pillai, C.S.G. 1983. Structure and genetic diversity of recent Scleractinia of India. *J. Mar. Bio. Assoc. India*, **25** : 78-90.

Romano, S.L. 1996. A molecular perspective on the evolution of scleractinian corals. *In :* Stanley, G.D., Jr. (Ed) *Paleobiology and Biology of Corals*. The Paleontological Society, Columbus, pp 39-57

Romano, S.L. and Cairns, S.D. 2000. Molecular phylogenetic hypotheses for the evolution of scleractinian corals. *Bulletin of Marine Science*, **67**(3) : 1043-1068.

Roniewicz, E. and Morycowa, E. 1993. Evolution of the Scleractinia in the light of microstructural data. *Courier Forschungsinstitut Senckenberg*, **164** : 233-240.

Salvini-Plawen L.V 1978. On the origin and evolution of the lower Metazoa. *Zeitschrift fur zoologische Cnidaria und evolutionsforschung*, **16** : 40-88.

Scheer , G. and Pillai, C.S.G. 1974. Report on Scleractinia from the Nicobar Islands. *Zoologica (Stuttgart)*, **42** : 75 pp.

Sheppard, C.R.C., 1987 Coral species of the Indian Ocean and adjacent seas: a synonymised compilation and some regional distribution patterns. *Atoll Research Bulletin No.*, 307

Smith, S.V 1978. Coral reef area and the contribution of reefs to processes and resources of the world oceans. *Nature*, **273** : 225-226.

Stolarski, J 1996. *Gardineria* – a scleractinian living fossil. *Acta Palaeontologica Polonica*, **41** : 339-367

Stolarski, J. 2000. Origin and phylogeny of Guyniidae (Scleractinia) in the light of microstructural data. *Lethia*, **33** : 13-38.

Stolarski, J. and Roniewicz, E. 2001. Towards a new synthesis of evolutionary relationships and classification of Scleractinia. *Journal of Paleontology*, **75** : 1090-1108.

Swell, R.B.S. 1922. A survey season in the Nicobar Islands on the R.I.M.S. Investigator October 1921 to March 1922. *Journal of the Bombay Natural History Society*, **28** : 970-989.

Turner, J.R., Vousden, D., Klaus, R., Satyanarayana, Ch., Fenner, D., Venkataraman, K, Rajan, P.T., Subba Rao, N.V., Alfred, J.R.B., Ramakrishna, Raghunathan, C. 2009. Coral Reef ecosystem of Andaman Islands - Remote Sensing and Rapid Site Assessment Survey. *Rec. zool. Surv. India, Occ. Paper No.*, **301** : 1-132.

Vaughan, T.W. and Wells, J.W. 1943. Revision of the suborders, families, and genera of the Scleractinia. *Geological Society of America Special Papers*, **44** : 1-363.

Venkataraman, C., Ch. Satyanarayan, Alfred, J.R.B. and Wolstenholme, J., 2003. *Handbook on Hard Corals of India.*, 1-266.

Veron, J.E.N. 1986. Corals of Australia and the Indo-Pacific. Angus & Robertson Publishers, London.

Veron, J.E.N. 1995. *Corals in Space and Time: The Biogeography and Evolution of the Scleractinia.* University of New South Wales Press, Sydney, 321 pp.

Veron, J.E.N. 2000. Corals of the world. Volume 1-3. Australian Institute of Marine Science and CRR Qld. Pty. Ltd. Australia.

Veron, J.E.N. 2002. *New species described in 'Corals of the World'* Australian Institute of Marine Science Monograph series vol., **11** : 1-205.

Wallace, C.C. 1999. *Staghorn Corals of the world.* CSIRO Publications, Melbourne, pp. 421.

Watson, G.M. 1988. Ultrastructure and cytochemistry of developing nematocysts. *In* : Hessinger, D.A. & Lenhoff, H.M. (Eds), *The Biology of Nematocysts.* Academic Press, San Diego, pp. 143–164.

Weill, R. 1934. Contribution à l'étude des cnidaires et de leurs nématocystes. 1. Recherches sur les nématocystes (Morphologie, Physiologie, Développement). 2. Valeur taxonomique du cnidome. *Travaux de Station Zoologique Wimereux*, **11** : 1-701.

Wells, J.W. 1956. Scleractinia. *In:* Moore, R.C. (Ed) *Treatise on Invertebrate Paleontology* : *Coelenterata.* Geological Society of America and University of Kansas Press, Lawrence, pp. F328-F443.

Wilkinson, C. (eds.). 2002. Status of coral reefs of the world. Australian Institute of Marine Sciences, Townsville : 1-557

Won, J., Rho, B. and Song, J. 2001. A phylogenetic study of the Anthozoa (Phylum Cnidaria) based on morphological and molecular characters. *Coral Reefs*, **20** : 39-50.